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The Oil Man's Calendar

FEB. 4	National Oil Scouts and Landmen's Association, Dallas, Texas.
15–18	American Institute of Mining and Metallurgical Engineers, New York.
APR. 8– 9	American Petroleum Institute, Division of Production, Eastern District, Wm. Penn Hotel, Pittsburgh.
7– 9	American Association of Petroleum Geologists, Texas Hotel, Fort Worth, Texas.
MAY 5– 6	Petroleum Electrical Association, Houston.

Contents . January 18, 1943

Volume 108, No. 7

The Changing Panorama..... 7

Editorial Comment:

How Far Can We Go?..... 9

Technical and Feature Articles:

Proper Installation and Care Stretch V-Belt Life.....10
By ELTON STERRETT

December Wildcatting Yields But One First Class Field..18

Performance of Unconsolidated Sand Wells Using Gravel Packing 20
By READ WINTERBURN

Practical Operating Hints for the Pipeliner.....28

Practical Operating Hints for the Drilling Rig.....30

Degasification of Coal Seams Would Give East Gas Fuel.....33

Portable Device Facilitates Field Spooling of Wire Lines 34

News and Departments:

Looking Ahead With the Editor..... 2
Washington Roundup 37
Markets, Statistics and Prices.....45
U. S. Field Operations.....49
United States Well Completions.....57
United States Wildcat Starts.....60
Men in the Industry's News.....61
Squeaks From the Bullwheel.....62
Notes for the Equipment Buyer and User.....63
Index to Advertisers.....64

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The Changing Panorama

Less Prospects Found And Quality Poorer

DESPITE large-scale search, a falling off in the rate of finding prospective oil structures as well as in quality of discoveries during 1942 is reported by some companies employing large numbers of geophysical crews. Not all companies report a drop in number of discoveries, but practically all those contacted said the quality of geophysical prospects found during the year were below par.

One company, employing more crews than it has ever used with the exception of one period, asserted its rate of discovery was disappointly low. The geophysical prospects found, it said, also were of an inferior quality as judged against past results. Still another company, which employed 26 crews of various types, declared it was not finding as many prospects as normally and that the quality was poor.

Still another large company, in answer to a question, said it believed its crews were superior to any used previously, and that number of prospects found were running only a little less than normal, but that based upon previous concepts the discoveries were not of former quality. "This falling off in quality is no new thing, however," a company offcial said. "It has been going on for four or five years."

Another company said its rate of prospect finding was about as usual, but that the quality of discoveries were of an inferior nature as compared with those of a few years ago.

Higher Crude Prices By February 1?

THERE is talk that a price increase may be forthcoming for crude oil by February 1. We hear two figures mentioned, 25 cents per barrel and 35 cents per barrel. Particularly optimistic on a price increase is Colonel Ernest Thompson of the Texas Railroad Commission.

If the badly needed price increase in crude oil comes it should be accompanied by a commodity price increase on refined products. Refiners of petroleum, despite any opinion as to the contrary which some independents may have, are already being ground between a rock and a hard place and if refined prices are not advanced sufficiently to make up for their increased costs through a crude-price increase, their ability to carry on will be seriously disturbed.

South Texas Carrier Deal Very Important

COMPLETION last week of negotiations for purchase of United Gas Pipe Line Company's gas line from Corpus Christi to Houston carries a lot of weight. It means much to oil producers and refiners in Southwest Texas, and perhaps producers in West Texas also. It also is an important step in solving the complex problem of rearranging Texas crude and product flow so that the adjustments necessitated by operation of the big-inch East Texas-to-Illinois line will not interfere with the making of war products at refineries in the Houston-Beaumont area. It will serve an additional benefit in furnishing supplies to the big-inch line, when carriers between Houston-Beaumont and East Texas are reversed.

The United line will be converted to handle oil. Probably four stations will be added to provide a capacity of 60,000 barrels daily, of which about 25,000 barrels may be fuel oil taken from Corpus Christi area refineries and the remainder crude oil.

This means a sharp increase in call for Southwest Texas crude, which should cure the terrific transportation handicaps that troubled the region during 1942. Sinclair Refining Company is all set to take 20,000 to 22,000 barrels of sweet oil daily out of the Corpus Christi area. This will be moved through its newly completed line from Corpus to Houston. Magnolia Petroleum Company has increased its takings by 10,000 barrels daily. Now the converted United line will enable Corpus district refineries to step up their throughput to turn out 25,000 barrels of fuel oil daily that is scheduled to be delivered through proposed reversal of several lines between Houston-Beaumont and East Texas into the big-inch line. The remaining 35,000 barrels of capacity in the United line will be crude oil. Most of this will come from Southwest Texas it is thought, although West Texas may enter the picture. If the United line is not fully provided by Southwest Texas crude, oil from West Texas-New Mexico could be routed through Humble Pipe Line Company's looped system to Ingleside for delivery into the United carrier. The United line crosses Humble's, so there would be no handicap in this plan. It is thought the Permian Basin sour crude could be slugged through the United line without much contamination of the "sweet" load originating in the Corpus area.

Thus in addition to 25,000 barrels of fuel oil, an increase of about 65,000 barrels in deliveries of Southwest Texas crudes to Houston-Beaumont refineries is scheduled to take place. This will offset crude supply losses created by big-inch takings from the East Texas field.

Waning Discoveries Presage Less Output

RISING war demands indicate that annual consumption in 1943 may reach 1½ billion barrels, almost 100 million barrels more than the peak production of 1941. When this unusually large prospective demand is considered in the light of waning discovery volumes in recent years, it immediately becomes frightening that the industry may be unable to produce sufficient oil to satisfy needs. If this be true, the successful conclusion of the war may be seriously damaged.

An editorial in a recent issue of the *Red Triangle Magazine,* house organ of Continental Oil Company, carried these interesting and awakening observations on the industry's producing ability:

"The decline in discoveries over the past five years, the lack of development in proven and semi-proven areas, and the cessation in wildcatting for new reserves in 20 oil producing states indicate very definitely that the annual production from 1943 to 1947, inclusive, will be as follows:

1943	1,349,650,000 barrels
1944	1,283,100,000 barrels
1945	1,189,525,000 barrels
1946	1,086,555,000 barrels
1947	995,610,000 barrels

"This represents a decline in production, between the years of 1942 and 1947, of 372,410,000 barrels, estimating the production for 1942 at 1,368,020,000 barrels.

"To give some idea of a safe rate of extraction with the time element as a factor and assuming we do have 20,000,000,000 barrels underground, anoth-

er approach to our situation gives us a definite warning. By studying the history of oil production and the economics of various methods of recovery, we find that it will take 40 years for us to recover 13,360,000,000 of the estimated 20,000,000,000 barrels. Furthermore, we think it is only possible for us to lift, free of severe water contamination, a total of 5,904,000,000 barrels for the period 1943 to 1947, inclusive, which is 35.1 percent of our stated total reserves. While we are a little late, it is believed that the administration must promptly become cognizant of the fact that reserves are not made available for any purpose by the mere manipulation of a valve. Every well and every field no matter where located presents a problem to secure maximum recovery which must necessarily be governed by a time factor. A large line drawing upon Mid-Western reserves at the rate of 300,000 barrels a day calls for an annual supply of 109,500,000 barrels. In addition, strategically located places and plants are being selected for toluene, high-octane gasoline, and rubber manufacture, all of which demand the heart of any crude being processed and, in many instances, selected crudes. To stop exploration and exploitation at a time when oil is so vital to our cause is instituting a short sighted policy that can lead us into an unnecessarily prolonged combat. We must let down the bars on wildcatting and, in doing it, give the wildcatter a price justifying the speculative undertaking which at best is a 5 to 1 shot—regardless of scientific methods of location that only offer to find favorable structural conditions on which oil might be found."

Floods in the Mississippi and Ohio river valleys hit deliveries of oil to the East Coast in several spots. They not only washed out the big-inch pipe line Mississippi crossing to cause a several weeks delay in its use, but also have disrupted barge movements and in some instances have slowed down train shipments.

Fighting cold weather as well as wooded and rugged terrain through eastern Pennsylvania, construction work progresses on extension of the big-inch War Emergency pipe line from Illinois to the East Coast.

Cumbersome System Delays Materials

THE cumbersome system now in effect on securing tubular goods is interfering with efficient operation and accounts for a great many of the headaches operators are having nowadays, a Gulf Coast operator told THE OIL WEEKLY during the week.

This operator was drilling a deep well in Louisiana and unexpectedly found it necessary to have about 1300 feet of additional pipe. When the need for the pipe arose the need was immediate, as is frequently the case.

The operator, on the advise of the PAW contacted six oil companies listed by PAW as having on hand casing of the size and weight desired. In due time he received the replies of all six. As anticipated, none had casing to spare. Armed with these six "rejections" he then made application to PAW for a PD-1A. After the minimum of time required for granting his request, about two weeks, he received the PD-1A which was sent to his supply company.

"There was no stock on hand in this area from which to get the pipe," he said, "and when the order got to the mills, even if the mill had it on hand, it could not ship 1300 feet because it was less than a car lot. The result is that I wait until a carload of pipe is shipped and my pipe becomes a part of it—but not until all the double A's ahead of me are out of the way. I'll probably get my pipe next summer. I needed the pipe when I first began trying to get it, and needed it badly.

"There ought to be some plan by which mills stocks, if there are any, should be kept at points closer to the place of use than the mills. It is not the fault of the mills, but such pipe as can be had ought to be in such places as to permit moving it to the point needed immediately by truck."

A mill representative said that there was little tubular stock at any of the mills excepting small stuff. Yard stocks in the oil country are as empty as a last year's bird's nest. He said that the mills realized the difficulty this is occasioning oil operators and expressed the hope that the Controlled Materials Plan, designed to prevent the accumulation of undue stocks in the hands of users and the maintenance of stocks from which products would be drawn as needed, might help.

Editorial Comment

How Far Can We Go?

By RAY L. DUDLEY, Publisher

FACED with winning the most expensive war in the history of the world, faced with a national debt which is already colossal in size, and facing wartime shortages in meat, other foods and materials, we now face the intimation from Washington that we must extend to the other nations of the world the same abundant life which the American system of free and aggressive enterprise has made possible here under a democratic type of government.

The suggestion for this new adventure of being an international Santa Claus does not come from the people who will have to bear the burden of it, but comes from the same administrative brains which a few years ago were killing little pigs and plowing under crops as a method of solving our problems of domestic economy!

At this point, however, we would like to comment that the decision as to how much help, other than that of a military nature, we shall extend to the other peoples of the world, is a decision which is primarily and solely one for the American people themselves to make. Their duly constituted representatives in the Congress and Senate, and not the President and a group of bureaucrats, are charged with the responsibility of making such a decision.

There seems still to be a disposition on the part of the Administration to feel that there is nó bottom to the barrel of American plenty. We still have the war to win, and all of us are well sold on the idea that winning it is our Number 1 job. But many of us realize that even with taxes at levels far higher than are now imposed, we are still fighting the war on credit, and must pay for it in large part out of taxes to be collected after the war is over. It would appear only common sense to discharge our obligations before we embark upon an international scheme of giving the abundant life to those abroad.

The American people have the reputation of being generous. Let a famine hit a country and the pockets of the people, through voluntary donations, are opened to those in distress. Let an earthquake hit a foreign community and our response is instantaneous.

But there is a vast difference between being generous to those in distress who are less fortunate than ourselves, and a policy of deliberately setting out to raise the standard of living abroad.

In the first place, the American standard of living is the product of the American system of enterprise. By the foresight of our fathers in giving us the kind of government and economy they did, we have been able to raise our own standards of living to their present heights. Some of the nations which appear to be on the agenda for wholesale feeding at our hands are nations which have never attempted to free themselves of the shackles which have meant low standards of living. Some of them are not friendly and their friendships can no more be bought with the fruit of American endeavor than was the friendship of Japan bought with the generous aid we gave Tokio after her disastrous earthquake.

Americans want their fighting forces to be well fed—to have everything in the way of food and material necessary to win this war. We do not object to helping to feed those countries now short on food whose efforts are being directed toward killing Nazis. But we do think that our duly constituted representatives in Washington should scrutinize most carefully schemes which are internationally socialistic in mind and which do not take into practical consideration our own domestic problems of winning a war and then paying for it, plus our own problem of recovery and return to peacetime life.

We hear a great deal about a meat and food shortage. If the government should make a survey of the cattle breeding stock situation in this country right now we believe that it would find that we have from five to ten percent less breeding stock on hand today than we had a year ago. Shortsighted planning, or failure to plan, are largely responsible. Other food stuffs are short as a result of early 1942 and late 1941 manpower shortage. The shortages will be greater next year, even if we do not embark upon an extravagant plan of feeding the world.

No business could operate on the same basis or lack of common sense which our government has shown on many important matters. Is it too much to fear that not even rich America can stand the strain of winning a war on credit, and discharging that obligation, or at least attempting it, without adding the additional burden of forcing a standard of living on other peoples who have not earned it?

Some Advice

TO MANY who feared that the trend of our country was drastically and possibly permanently to the left, the complexion of the new Congress is most reassuring. Yet no one, even the most ardent hater of the American form of socialism known as the New Deal, would want this new Congress to fail to consider that the job of winning the war is the first job of the Congress and of all American people. To the new congressmen let us offer this advice — "Even if partisan New Dealers sought to use the war as a means of promoting their own ideas of socialism, be not tempted to retaliate. Take the reins of legislative action firmly in your hands where they belong, but let no feeling of antagonism cause you to mistake partisan politics for statesmanship, and above all, be constructive in your efforts to help us win this war."

Proper Installation and Care S-T-R-E-T-C-H V-Belt Life

By ELTON STERRETT, Staff Writer

Proper Care of V-Belts

Rubber is indispensable to the V-belt, and shortages and restrictions in rubber supply quickly reflect in stocks of V-belts. This makes it imperative that all users adopt every means to prolong present belt life. Follow these suggestions:

Do not allow oil, grease or gasoline to come in contact with belts.
Avoid exposing belts to sunlight and excessively hot or cold weather.
Insure proper sized pulleys for drive. Too small pulleys shorten belt life.
Provide take-up facilities. The initial setting should allow 1/5 motion toward driven unit, 4/5 for belt take-up.
Avoid heavy overloads. Add one or more belts to initial set-up if loading is increased.
Don't leave tools or other objects where they may fall into and damage belts.
Avoid abrasion against nearby objects. Slight shaft misalignment may set up destructive side-sway and intermittent contact.
Do not force belt onto sheave with tools of any kind. Slack off on take-up and *lay* belt in grooves.
Work belts around grooves until all the slack is on one side of the drive, and then tighten take-up to secure desired tension.
Use sufficient number of correct-sized belts to handle maximum load. Check to insure sheaves being over accepted minimum diameters for belt size and type used.
Design new drives to call for standard size and length of V-belt with adequate adjustment for stretch.
Prevent V-belts from bottoming in grooves. Bottom friction sets up destructive heat, greatly shortening belt life.
Do not use belt dressing. If belt slips, clean with rag moistened with high-test gasoline (clear, not Ethyl) and tighten drive slightly.
See that all sheave grooves are clean, free from burrs or nicks and excessive wear. Replace sheaves and check alignment periodically.
On failure of first belt in drive, renew throughout. Save other worn belts for replacements as second set shows signs of excessive wear.
Before starting drive first time, check: (1) pulley alignment; (2) bearings for oil; (3) drive clearances. Adjust so that at full load only slight bow or sag appears on slack side.
Vertical drives, extremely short-center installations and drives for pulsating loads where no flywheel can smooth peaks must be operated more tightly than others.
Check for odor of hot rubber. If this persists after first few minutes of operation, drive should be checked throughout for cause and difficulty corrected.
Belts should be stored uncoiled; preferably hung over forms of minimum pulley diameter or larger, and in a cool, dark and *dry* place. Do not hang spare belts on nails or loop over pipes or single board supports, and do not tie together tightly with cord or wire.
Protect against acid fumes, smoke and dust.

ANOTHER EQUIPMENT MAINTENANCE FEATURE

EVEN more vital in V-belts than in tires, rubber is at once the flexing agent, binder and wearing surface, and without it the continuous type of V-belt would fall far short of performing its present widespread and necessary part in keeping the equipment of the oil industry turning.

Rubber binds together in a tenacious yet yielding bond the cords which give the belt its resistance against stretch, it forms the outer section which must elongate at each sheave distortion and return to normal length on the straightaway, it powers the gripping areas which contact the faces of the sheave groove, and it protects the fabric or cord carcass against water, weather and grit. Rubber, natural or synthetic, is indispensible to the continuous V-belt, and shortages or restrictions in rubber supply are quickly reflected in V-belt stocks. This condition makes it imperative for every user of V-belts, every operator whose equipment includes one or more of these vital units, to adopt every means which will prolong the life of present equipment.

Installation

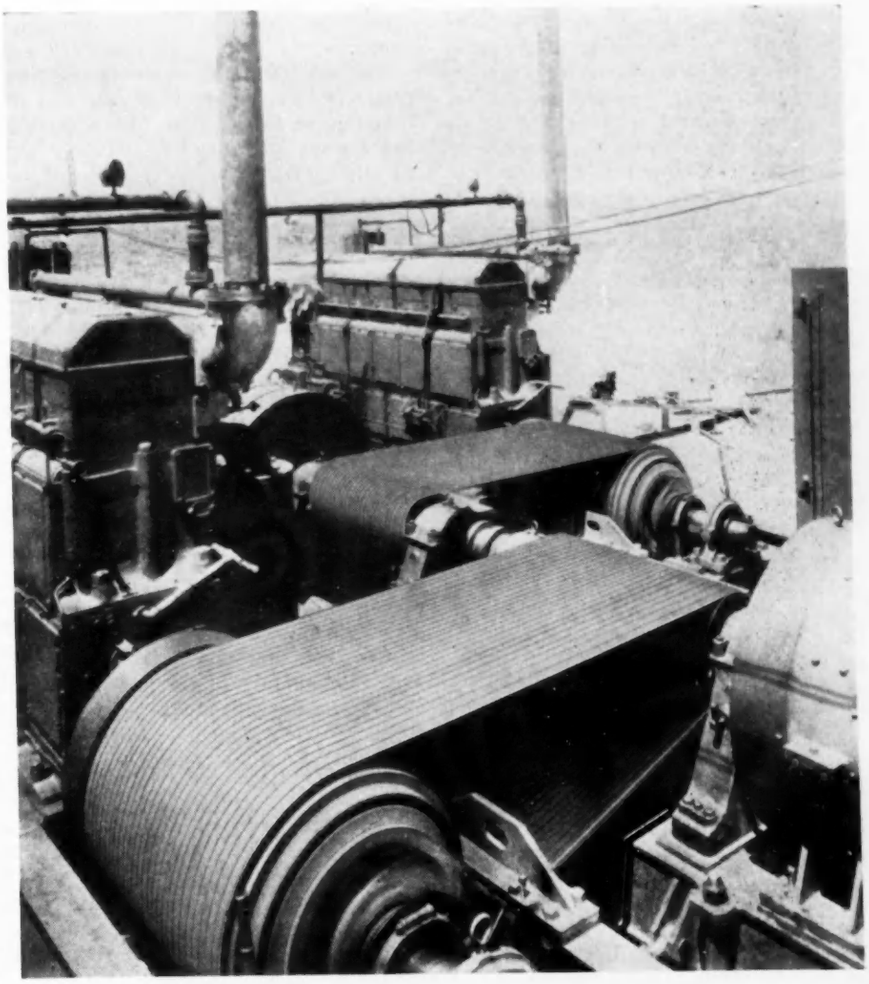
Proper installation is of prime importance in obtaining maximum life from the drive. Because the V-belt is highly flexible in all directions save parallel to the drive, in contrast to the relative lateral rigidity of flat belts, some users seem to be of the opinion that the belts will automatically compensate for slight misalignment, shaft center variations and other supposedly minor inaccuracies.

True, the V-belt will take up these shortcomings in drive planning and installation, but only on the payment of a high premium in shortened life. If the V-belt drive be considered as much of a precision drive as a chain or gear drive, and the same care and attention be devoted to insuring three-plane alignment of the set-up, the belts are called upon only to transmit the required horsepower, and should reach maximum service life. Shafts of driver and driven units should be parallel and the center distance the same at both ends of the shafts; sheaves must be

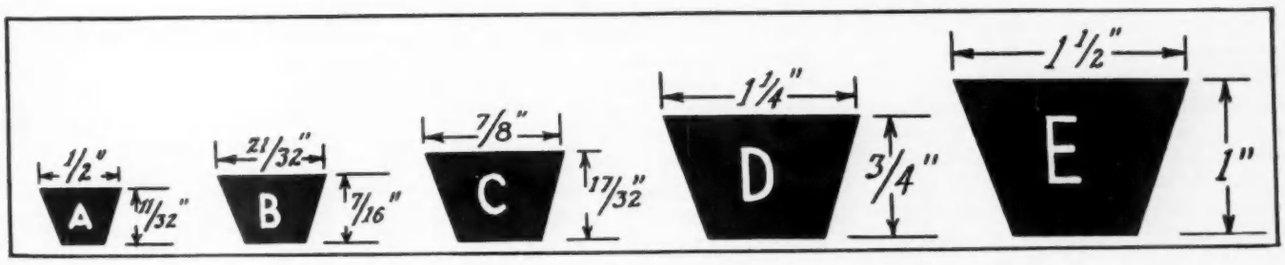
accurately centered and properly set on the shafts, and the center lines of individual V's on driver and driven pulleys should coincide. Such a drive setting insures (assuming new, standard sheaves) that each belt of the drive, whether two or a dozen be used to transmit the power, will be of the same length, and will travel exactly as far as does its neighbor with each revolution of the driving pulley. With such a setup, and using factory-matched belts, slipping in the sheave grooves is reduced to a minimum, and consequent wear of the side wall or gripping area practically eliminated.

Installing belts on such a drive calls first for shortening the center distances—by moving one or both units on their foundations—so that the belts can be *laid* in place. Usual recommendation of drive layout is to provide one fifth the adjustment travel toward the other sheave, four fifths in the opposite direction being used to take up belt slack. When the belts are all laid in the grooves of the fixed sheave, varying amounts of slack or sag will be apparent over the span of belt between the two pulleys. It is fatal to proper belt service simply to tighten the drive when this condition exists.

Time spent in adjusting the tension on all the belts to give uniform initial pull on the driving side will distribute the load evenly across the drive, and insure equal wear on all the units. Since the V-belt cannot slip around the groove in either sheave to adjust itself to the tension in adjacent belts, some maintenance men adopt the practice of blocking the belts in the grooves of the



On extremely wide drives such as these on a drilling rig, exact parallelism of shafts is imperative, as otherwise one end belt would be overstressed and fail rapidly. Such drives are normally covered to protect belts from heat, light, moisture and falling objects but not enclosed so tightly as to prevent proper ventilation.



Speed of Small Sheave R.P.M.	HORSEPOWER													
	½	1	2	3	5	7½	10	15	20	30	50	75	100	150 & Over
4000														
3500														
3000														
2500														
2000			A											
1750														
1500														
1250														
1000														
900							B							
800														
700									C					
600											D			
500														E
400														
300														
200														
100														

Typical V-belt cross sections in standard widths and thicknesses. Table shows application of each belt size to transmit tabulated horsepower at specified speed of small sheave. If division of drive horsepower by indicated power of certain belt leaves fraction over, another belt should be added to drive. Further overbelting, a sadvocated by M.V.B.D.A., should also be included if possible to extend life of drive.

larger or fixed pulley so there can be no slip or shift while checking tensioning. A piece of 2x4 timber, notched to fit over the pulley and apply pressure against the belts, may be held in place with a jack or wedges, and afford a fixed point from which the tensioning may be checked.

Then, taking each belt in turn at the other sheave, the upper span is pulled tight and laid into the sheave groove, being patted or forced into the groove to prevent loss of tension. The slack on the opposite side of the belt should hold this tension unchanged, once the belt is placed. When this operation has been performed on each belt in turn across the drive, the tops of the tight sides should lie in one plane, and should have uniform resistance against vertical deflection.

When the belts have all been placed so as to have apparent uniform tension, and while the one sheave is still blocked with the belt-retaining device, the drive should be adjusted to take up the slack existing in the lower parts of the belts. Since one sheave is free to revolve as this adjustment is being made, all belts should retain their initial tautness. Then, removing the retainer, all belts should show uniform sag under a specified loading.

One check for this before putting a drive into service may be made by laying a straightedge across the drive, and hooking a weight on each belt in turn. Measurement of the deflection will afford accurate indication of the accuracy of the initial tensioning. Should one or more belts show appreciable variation (one user specifies 1/16 inch per foot of span under loading with 10-pound weight on C section belt) the belt or belts showing excessive sag should be readjusted and the variations ironed out before putting power on the drive.

A simple method of insuring belt-tension equalization has been worked out by one drilling contractor for use on his drilling-rig drives which gives uniform belt loading and requires less time than the weight-check described above.

The line through the centers of the driver and driven shafts is extended to the rims of the sheaves, and a narrow line scribed or painted across the units parallel to the shafts. The distance between these pairs of lines is therefore the same, top and bottom. The V-belts are likewise marked accurately into halves, with lines across the outer or flat surface so that the distance between them is the same, measured on either portion.

The inner belt of the drive is then laid in place, slack having first been provided by moving the adjustable pulley toward the other to permit this to be done, one mark on the belt being so placed as to coincide with the scribing on the fixed pulley. The other belt mark is aligned with the corresponding mark on the movable pulley, and the other belts then laid in place with the corresponding pairs of belt marks aligned with the pulley guide scribings. This method insures the same amount of belt being applied between marks, with the result that when the drive is tightened the slack is uniformly distributed.

On some drives, to prevent possible shifting of belts as subsequent units are put in place, the adjustable sheave is rotated so as to bring the upper side of the drive approximately taut and flat, and the shaft then blocked so that the unit cannot revolve and return slack to the tight side. Subsequent belts are then laid on and tightened by hand until the midway division marks coincide with those on the sheaves, this putting the same tension in all belts successively. Success of this method lies in the blocking of sheaves so they cannot turn and thus feed back slack, and in the proper settling of the arc of contact of each V-belt with its corresponding sheave groove.

An approximate method of equalizing belt tensions is used by one company, employing V-belt drives on all motor-driven pumping units. An old lawn-mower is the adjusting tool; the mower being reversed under the drive so that the ball-bearing wooden roller may be brought up against the under side of the drive by pressing down on the handle. The drive is then adjusted so as to introduce extra slack in the belts, the roller used as idler, and the belt which is tightest, and thus running ahead of its neighbors, is thereby overloaded and made to slip in the grooves until the load is divided fairly evenly. Weight-checks of belts for tension after tightening the drive again show that this temporary application of an idler will compensate for most of the slack in drives using D or E section belts, and will work even better on C or smaller sections.

Need for Tensioning

Because many V-belt drives operate over long periods with considerable sag in the slack side, it is sometimes difficult to get operators to maintain proper belt tension, especially on drives with rapidly changing characteristics or heavy shock or impulse in the driven unit. Unless the drive is properly tensioned, so that the shock is transmitted directly to the driving unit, the belts are subjected to excessive longitudinal snap or stress, and may break even as a loose string may be snapped under sudden jerk when greater force, applied gradually, is easily sustained. If belts break with abrupt section, almost as though chopped with an ax, the drive should be checked for sudden impulses, and the tension adjusted tighter than would be the case were even torque being transmitted.

Tension should be applied or the drive adjusted until slip is eliminated. This can be checked best by taking the speeds of driver and driven shafts and verifying against computed speeds from pitch circle diameters. When but little slip is indicated by this method, a very slight change in shaft distances by adjustment of movable unit should be

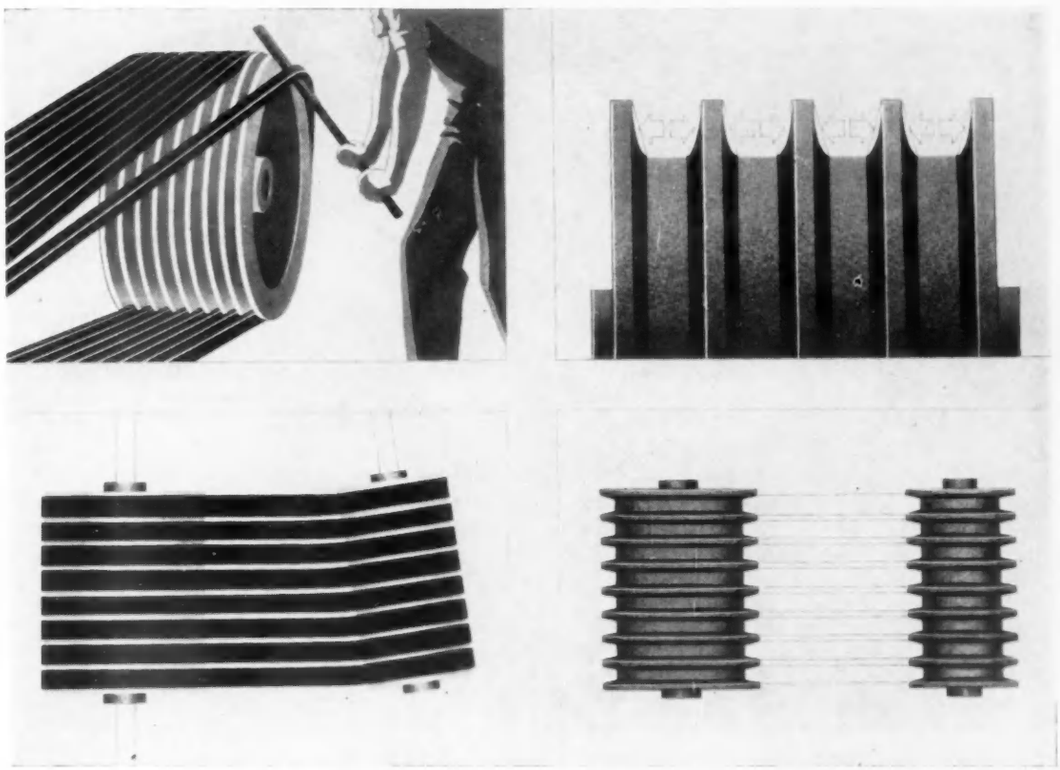
TABLE 1

Factors for Belt Horsepower under different applications.

	ELECTRIC MOTORS										ENGINES		
	A. C.								D. C.				
	Squirrel Cage				Synchronous		Single Phase				Gas and Diesel		
APPLICATIONS	Normal Torque Line Start	Normal Torque Compensator Start	High Torque	Wound Rotor (Slip-Ring)	Normal Torque	High Torque	Repulsion and Split Phase	Capacitor	Shunt Wound	Compound Wound	4 or More Cyl. Above 700 Rpm.	Steam	Line Shafts and Clutch Starting
Compressors	1.4	1.4	....	1.5	1.5	....	1.2	1.2	1.2	....	1.2	....	....
Drawworks	1.6	1.6	....	1.8	1.8	....	1.8	....	1.8	....	1.8	1.8	....
Generators and Exciters	1.2	....	....	....	....	....	....	....	1.2	....	2.0	1.4	1.4
Line Shafts	1.4	1.4	....	1.4	1.4	2.0	1.4	1.4	1.4	1.4	1.6	1.6	1.6
Machine Tools	1.2	....	....	1.4	....	....	1.2	1.2	1.2	1.2	....	....	....
Fans and Blowers	1.6	1.6	2.0	2.0	2.0	2.0	....	....	1.4	....	1.6	1.5	1.5
Pumps, Centrifugal	1.4	1.4	1.4	1.6	1.6	1.8	1.2	1.2	1.2	....	2.0	2.0	....
Pumps, Mud	1.8	1.8	....	2.0	2.0	2.0	2.0	2.0	2.0	....	2.4	2.0	....
Pumping Units (Ind.)	1.8	1.8	....	1.8	1.8	....	1.8	....	1.8	....	2.0	2.0	....
Rotary Tables	2.0	2.0	....	2.0	2.0	....	2.0	....	2.2	....	2.2	2.0	....

Showing the factor by which the indicated horsepower of the drive should be multiplied before dividing by the indicated horsepower per belt to provide for excess loading through individual drive characteristics. Thus a drawworks requiring 200 Hp. to operate under maximum should have 200 x 1.8 horsepower or 360 Hp. in the V-belt drive if from high speed Diesel or gas engine.

V-Belt Abuse Illustrated



Prying the belt on tends to break down the compression section, introducing a weak spot which imposes shock on the cords and calls for early replacement. Top right shows groove wear on old drive. Attempt to use new belts with this sheave would quickly break down side walls or permit bottom friction and heat damage. Lower left shows side wear between groove and belt when shafts are not properly aligned. Lower right shows how in properly aligned drive belts carry drive loading only.

made. Too much change at this point will overstress the belts and result in premature failure.

Following the placing of the new drive and the initial tension adjustment, additional adjustment will be required after a brief running-in period. On drives in continuous operation with even torque, 48 hours is probably sufficient time to elapse before checking. During this interval the relatively soft outer surface of the rubber, bloom from the vulcanizing, dust and other material loosely adhering to the belt walls will have worn off, permitting the unit to seat slightly deeper in the sheave groove than initially, and thus introducing excess slack. Unless new belts are adjusted thus after a brief running-in period, burning, slipping and other damage is apt to impair the belt and greatly shorten belt life.

Old Sheaves

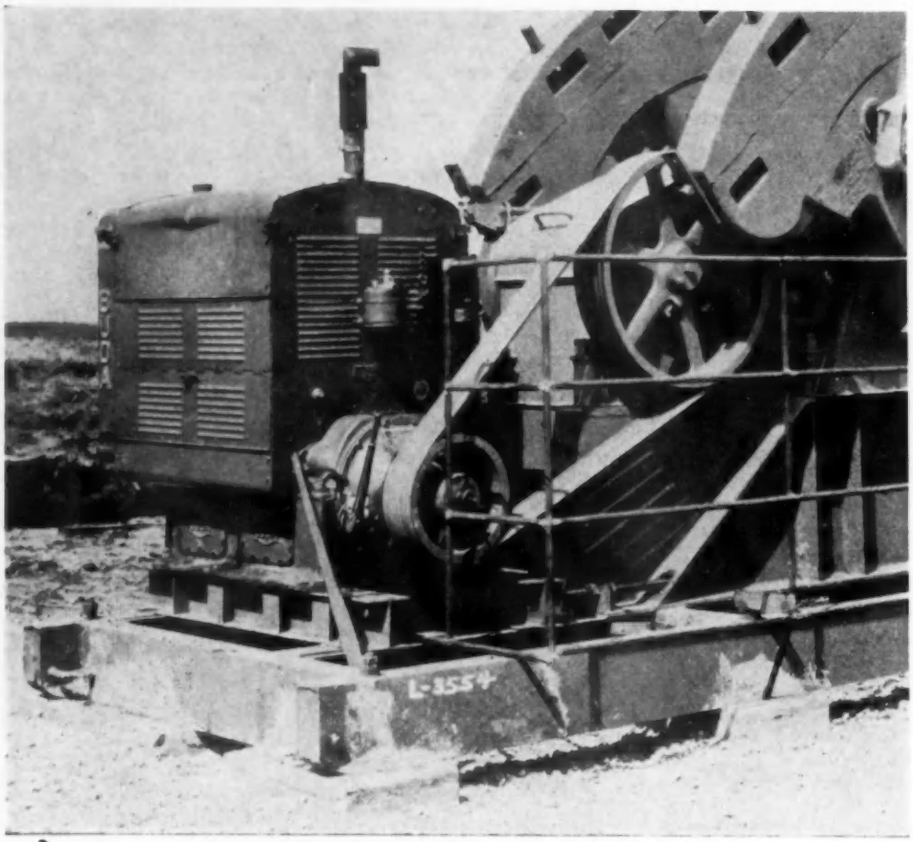
On a new drive, sheave grooves and belt cross-sections are usually properly mated, and correct contact areas are thus assured. When placing new belts on old sheaves, however, it is not safe to assume that conditions are uniform. One or more grooves may be worn excessively, one side of the casting may have been finer grained than the other —sometimes the case when sheaves are cast in job foundries and adequate precautions are not taken to insure uniformity—and the wear in the different grooves will give varying pitch diameters.

Before installing a replacement drive, the sheave grooves should be checked with a template or jig to determine: (1) depth; (2) straightness of groove side walls; (3) angularity of sides; (4) possible adherence of bits of rubber to the groove walls, causing scuffing or pulling of belts. If the grooves do not all show uniform pitch circles, as indicated by the level which the gauge takes in the grooves, it is readily apparent that the various belts are running at different speeds, and that only by slipping of some belts can the entire drive rotate at a given speed. Such a condition is frequently detected on a drive where initial installation did not include equalization of belt tension, or where the two shafts or sheaves are not exactly in line.

Where excessive sheave wear is found, the relative scarcity of belt material over sheaves should call for sheave replacement whenever possible. If replacement is not feasible, care should be exercised in having the sheave turned to proper groove form. On a large sheave, removal of even the relatively small amount of metal necessary to true the grooves may so reduce the pitch diameter of the unit as to exceed the capacity of the belt adjustment provided on the driving unit.

Large sheaves can be built up by metallizing, welding or brazing, or, if the sheave be large enough, the grooves may be partially filled and then turned to give bottom contact only and thus to transform the unit from V-v to V-flat drive. This is especially applicable when the reduction is of the order of 5-1 or greater, and the center distances between shafts is not appreciably greater than the diameter of the larger sheave.[3]

Only when the sheave must be turned down beyond the adjusting limits of



Heat from the engine, oil slung out by the reduction drive or from the unit bearings, dust, dirt and angularity of pull all add to the factors tending to shorten belt life on a drive such as this. Shielding of the drive on top and side toward engine will cut off much of the destructive heat, without interfering with ventilation. Drive is adjustable through shifting of entire power unit.

the normal drive should a tightener or idler pulley be used. The use of the idler outside the drive introduces backbend of greater or less intensity into the belt, throws compressive stress into that portion of the belt designed and fabricated to sustain stretch only, and in like manner tends to stretch the inner portion of the V, which is built to resist compression only, and which therefore is built up of fabric or cord plies without sufficient rubber interposed to absorb the reverse flexing demanded by the idler.

Belt Guards

Any V-belt drive should be guarded, both as protection against accidents to operating personnel, and to prevent the damage of the drive through objects falling on it or becoming entangled with the belts and carried over the sheaves. Sunlight, heat, dust and oil are all enemies of the rubber in the belts, and should be excluded whenever possible. The provision of a proper guard should be considered a part of the drive installation, and the guard maintained at full effectiveness to insure drive efficiency.

Care must be exercised when installing a guard to provide proper ventilation. A drive totally enclosed cannot dissipate the heat generated by contact between belt and groove walls, and the cumulative effect gives a temperature rise which soon injures belts, softens the binder, and if not corrected, results in drive failure. The normal V-belt will stand operating temperatures up to 140° F., and special belts, designed and compounded for high-temperature operation, may be run at temperatures of 170 to 200° F., without injury. It should be borne in mind, however, that temperatures in excess of 100° F. hasten oxidation of the rubber and thus tend to accelerate deterioration.

Rough check of the temperature of a drive may be obtained by holding the hand against either sheave immediately after shutting down the drive. If no heat is radiated or conducted from the driver or driven mechanism, the sheave should not feel more than moderately warm. If the sheave feels hot, it is evidence that the temperature is well above safe operating values, and the drive should be corrected. Where the drive is from an internal-combustion engine, and the jacket water temperature can be determined, it is relatively easy to compare the heat of the sheave with that of the engine jacket, and thus to determine the amount of excess heat to which the drive is being subjected.

Guards should provide ventilation. If the guard encloses the drive and is open toward the motor on electric drives, care should be exercised to see that the drive is not on the exhaust side of the motor ventilating system, or the guard will tend to trap the hot, dry air from the motor around the belts, thus aggravating the heating effect. Where this condition cannot be avoided, the guard should fit closely around the shaft on the motor side, and should be open only where the danger of forced hot draft is not present.

If, for protection against external objects, both ends of the drive must be closely enclosed, either the bottom of the guard should be left off, or adequate louvres set in the sides. One drilling contractor insures ventilation for his compounding drives by welding a 3-foot stack of 6-inch pipe atop the high end of the guard, with a 45-degree elbow at its top to divert rain and possible falling objects. The natural draft up this low stack is sufficient to insure fresh, cool air being drawn in at the bottom of the drive case.

Another method of insuring drive ventilation is to mount a narrow fan on the driver shaft alongside the sheave, a simple paddle-wheel fan setting up an air current which, if directed by the guard, will carry off much excess heat as it finds its way through louvres or apertures in the guard.

Metal is a better material for guards than wood, the use of ordinary corrugated roofing for sides being ample for normal protective purposes, and offering considerable radiating surface for the dissipation of drive heat. If carried on sucker-rod or pipe brackets, with two or more longitudinal braces, this same material is amply strong to

protect the drive against any impact save one severe enough to crush even a heavy structure.

Where the drive is initially adequate, but eventually shows high replacement demand, check of the total load frequently brings to light the fact that the initial loading has been increased, and sometimes more than doubled, by the addition of additional units, or in the case of wells, by the drop in fluid level as a field approaches depletion.

Even where no overloading is present, but the drive is being operated at full computed horsepower, statistics developed from tests run by the engineering research bureau of the Multiple V-Belt Drive Association[2] show that, if 10 belts of a given cross-section will fill the normal requirements for a certain drive, adding 1 belt will increase the life of all the belts by 40 percent, and that the use of 2 extra belts, or a 20 percent overbelting of the drive, will give double the life of the drive as originally designed. Likewise, removal of 1 belt from the initial set-up will result in the failure of the remaining 9 after an operating life of only 65 percent that expected from the 10. If the initial set-up be but 5 belts, removal of one will result in cutting the drive life to but 40 percent of that originally planned. These figures show the wastefulness of the usual oil-field practice of continuing to operate the remaining portion of a drive after the failure of one belt. Even if the remaining belts do not fail by breakage before the full complement is again restored, the stretch and overstress imposed on the belts will greatly shorten their useful life.

Due to the overstressing imposed on one new belt replacing one which has failed from an old set, it is frequently best practice to continue to operate the drive one belt short, rather than attempt to compensate for the overloading by one new unit. Since the old belts run lower in the grooves than new ones, the one replacement will ride high, travel faster, and carry much more than its pro rata share of the load. Cord rupture will probably relieve the belt of its overload after a short period of operating thus leaving the drive in effect one short, and thus illustrating the advisability of running in this condition rather than adding a *new* replacement.

Where belts are available, an entire drive should be replaced as soon as one unit fails. If this is done, the old belts should not be discarded, but kept as possible replacement units for other old drives of equal or lighter demand characteristics. This is especially advisable for belts used to drive pumping units, where many premature failures are encountered due to abuse of the belts in storage, handling, or installation.

One company, having more than 200 V-belt drives on its pumping units in one area, has set up certain tests and standards for checking belts removed to permit installation of complete units. In the central warehouse a standard sheave is bolted to a wall, high enough to allow the maximum belt to clear the floor when hung over it. A small sheave, likewise of the proper cross section for the belt being checked, is provided with a hook slung from a short cross shaft so that the sheave can be set into the lower loop of the belt and a standard weight placed on the hook. A scale, set into the wall and calibrated to allow for both sheave diameters, permits the reading of the exact belt length from a pointer carried on the adjustable sheave shaft. The belt is then tagged to show its exact length under slight—and uniform—loading, and belts of equal length are collected into replacement sets which are found to give greatly extended life over haphazard replacement by belts chosen at random without previous checking.

This same company subjects any belts which show suspicious elongation to a check which detects internal breakdown, cord rupture, ply separation, and other failure which is not visible, or tangible, on the surface. The belt is run over a 6-inch flat pulley, while at the same time a spring-loaded pulley is held against the outside of the bend. A pantagraph pointer on the bearing arm of this pulley magnifies any variation in pulley position, and thus indicates irregularities in the belt cross section. Thus a rupture in any bank of cord plies would result in excess compression of the belt under the pressure of the loaded pulley, and the incipient failure would be indicated. Likewise, slippage or distortion of one or more of the plies in the fabric envelope of the belt would cause a hump or bunch which also would be shown by pulley arm movement. Belts which show abnormalities under this test are discarded or sent to scrap, as being too near ultimate failure to justify saving. Cutting of a number of belts at the points indicating trouble on the device bore out its accuracy, and thus enabled the company to eliminate

Belt tightener on this drive on an oil-field power is set within the belts and applies tension and bending of the same order as those from driver and driven sheaves. Extreme accuracy of belt manufacture to obtain uniform lengths is shown by lack of vibration in lower belts at full speed and under maximum load.

double servicing of drives by preventing the attempt at using unserviceable but apparently sound belts.

Belt Repair

While it is theoretically possible to cut out a worn or damaged section from a V-belt and to vulcanize in a repair, the difficulty of obtaining a perfect match between spliced cross section and the original belt is so great as to rule such an expedient out except in extreme emergency. The ends of the splice, no matter how expertly made, are apt to strike each sheave with an impact which, though slight, is cumulative in its effect at breaking down the unit. Even were the splicing such as to leave no shoulder or lap, the difficulty of matching original flexibility and stretch in the vulcanized repair is sufficient to rate possibility of success very low.

If a broken V-belt must be spliced with a metallic fastener, many users believe it advisable to cut the belt again exactly opposite the break, and then to use two splice members instead of one. In this manner they feel that the eccentricity of the drive introduced by the metallic element is counterbalanced and that the effect of centrifugal force through concentration of weight at the splice is equalized all around the drive.

In a class with attempted repair, insofar as its applicability to oil-field drives is concerned, falls the use of any type of belt dressing in a mistaken notion that such a procedure will increase the power transmitted by a given belt, or that such an expedient will take the place of proper tensioning through center distance adjustments.

Dressing applied to the belts will make them tend to follow the groove on the smaller pulley past the point of tangency with the pitch circle of the driving unit. This introduces back bend in the belt, accelerating breakdown, and also subjects the relatively light protection on the sides of the belt to transverse pulling or tearing. Eventually such operation will result in loosening of patches of the sidewall material or "hide" of the belt, with consequent irregular running and exposure of the interior to the effect of water and oil.

Even V-belts compounded with a cover of oil-resisting rubber or natural elastics practically unaffected by oils should be protected against oil drip. Even if the oil is unable to attack the coating of the belt, causing swelling, loosening and eventual flaking off in the case of rubber, it lowers the coefficient of friction between belt and sheave groove. This groove is the result of long and painstaking experimentation to determine the angle which will give maximum grip with minimum jamming. Such a groove, lubricated with oil or even a film of water, permits the belt to pull deeper into the groove and then, when the lubricating film has been squeezed out, it tends to jam and cause cover separation or cord failure.

Belt Storage

Instances where spare V-belts are carried in the back of maintenance gang pick-up trucks, there to vie with shovels, wrenches and odd-lot pipe nipples for space, are now few and far between. Difficulty of obtaining replacements, coupled with home-office publicity stressing proper belt protection, now insures the belts being kept in the warehouse until actually needed on the drive. It is in the storage of such units pending need that many companies are finding how inadequate were former methods.

No longer are belts hung over big spikes driven into the warehouse wall, or at best hung across a bracket of sucker rod or pipe. Where there is not space for a form or rack with diameter equal to or greater than minimum acceptable pulley size for the given belt cross section, shelf room is found which will permit the belts to be laid out flat, not coiled. The usual coil, with the belt closely wound and then tied or wired across the coils, tends to force the outer edge of the belt into the sidewall at each point of contact, resulting in deformation if the storage be extended, and subsequent breakage of the nicks and bosses formed, with ultimate belt failure at the weak spot thus started.

Perhaps even more serious in its effect on ultimate belt life is the practice of laying the belt across a bracket or rack sideways, so that the two ends sag and cause a permanent set in the belt which, when placed on a drive, will result in excessive side wear as the curved spots attempt to crowd through the sheave grooves.

Belt storage to obtain greatest service life should be clean, dry, cool, dark or at least out of the range of any direct sunlight, and away from possible acid, exhaust or gas fumes.

Experiments have been conducted looking to the possible further delaying of rubber oxidation through the use of some of the rubber paints on replacement belts. Although this is believed effective to prevent oxidation, the paint causes trouble when the belt is put into service, both by slightly enlarging the cross-sectional area of the belt and thus forcing it to ride high in the grooves, and by the frictional heat of belt operation tending to cause the paint to flake off and adhere to the sheave grooves, in turn bringing about sidewall failure and surface breakdown of the unit.

Other companies store spare belts on wide sheets of heavy paper, using sheets of paper between belts, and laying boards carefully around outside of the pile to keep out dust, fumes and light.

Capacity to stretch and return to its original shape is one of the most valuable characteristics of rubber, and is one most valuable when incorporated in V-belts. It must be remembered "that a rubber article which is kept under constant tension is much more susceptible to deterioration than the same rubber article at rest."[3] Thus if a V-belt drive is to be out of service over long periods, as on pumping installations at wells which are still making production by natural flow, V-belt life is extended and probable running time extended by slacking off on the drive adjusting screws so as to relieve the drive of that tension which must be in it if it is to transmit its rated horsepower without slip. One company, making this adjustment to conserve belt life, hangs a red placard over the motor switch calling for drive adjustment before attempting to pump.

Even better belt protection is secured, of course, if the belts be removed and stored properly against the time of probable use.

Where wells require infrequent agitation to restore natural flow, practice now tends to the removal of the V-belts on pumping drives at those units, and the carrying in the service truck of a single set of matched belts for use when power must be applied to the well.

If mildew is observed on any canvas objects, such as fire hose, stored in the company warehouse, all V-belts should be examined and wiped clear of any growth. Even though rubber-impregnated, the canvas forming the envelope for the cord carcass of the belt can be attacked by mildew and the ensuing rot break down the waterproofing afforded by the rubber, permitting the tension cords to be affected and the entire structure weakened to a point where it will speedily fail when subjected to the loads it is supposed to carry safely.

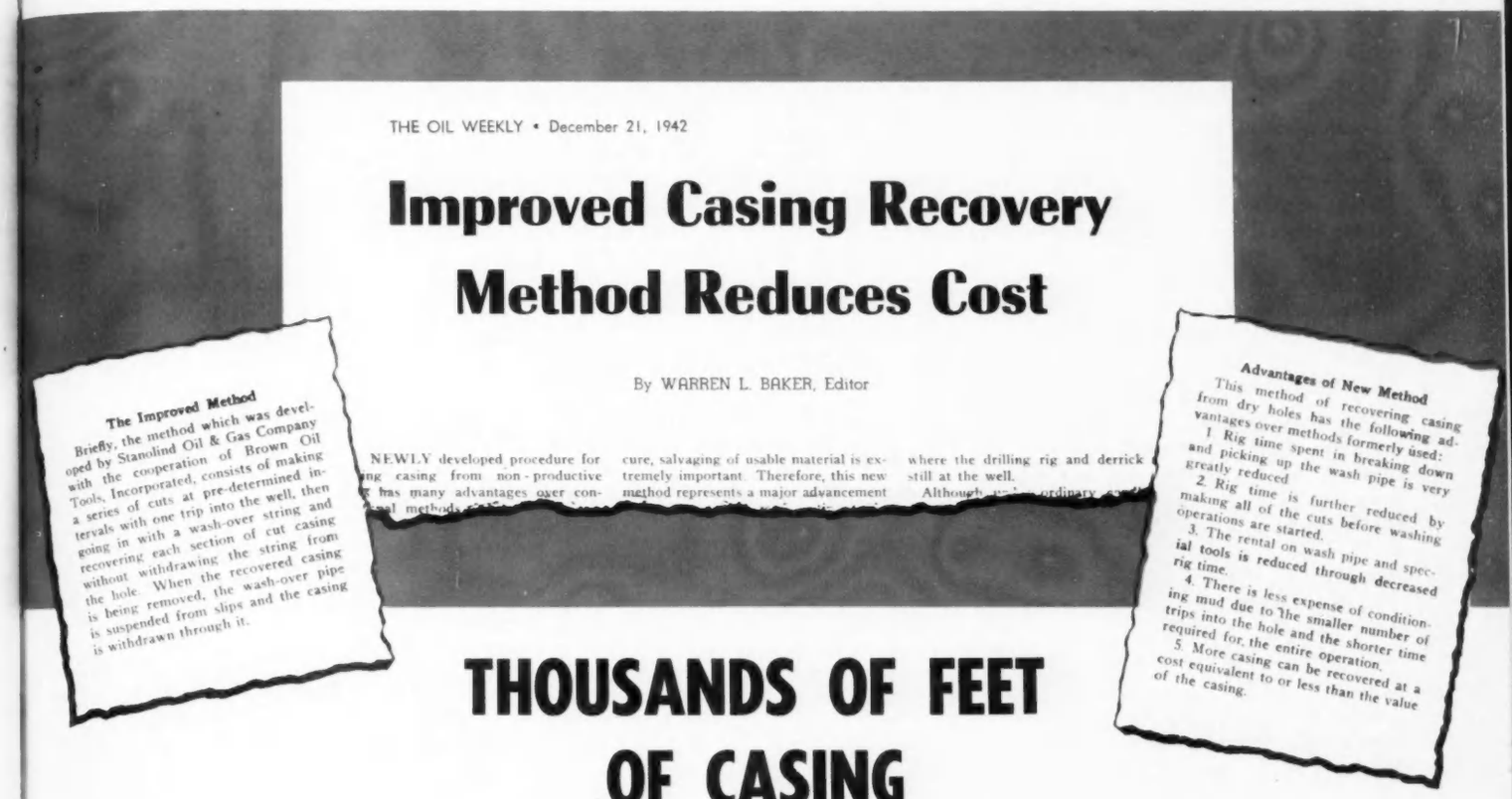
Even though protective measures may cost several times the initial price of the V-belt in time and labor, protection of the small available stocks to insure uninterrupted operation of the country's oil industry will pay big dividends in production when oil is needed. Conservation of V-belts on the lease and in the pump house alone may easily mark the difference between the oil that is ammunition when it is needed and the "too little and too late" which doomed many men and ships in the early days of the war. To save V-belts, use them carefully, and avoid the twin abuses of neglect and overloading.

REFERENCES

[1] F. L. Ives, "Power," December, 1940.
[2] "23 Ways to Conserve Life of Multiple V-Belt Drives," Multiple V-Belt Drive Association bulletin.
[3] Wm. S. Richardson, "Factory," February, 1942.

HERE'S HOW YOU CAN HELP UNCLE SAM SOLVE THE CASING SHORTAGE PROBLEM

These clippings are from the December 21 issue of The Oil Weekly. It behooves every operator to read this enlightening article on casing recovery.



THE OIL WEEKLY • December 21, 1942

Improved Casing Recovery Method Reduces Cost

By WARREN L. BAKER, Editor

NEWLY developed procedure for ...ng casing from non-productive ... has many advantages over con... methods ... cure, salvaging of usable material is extremely important. Therefore, this new method represents a major advancement ... where the drilling rig and derrick still at the well.

Although ... ordinary ...

The Improved Method

Briefly, the method which was developed by Stanolind Oil & Gas Company with the cooperation of Brown Oil Tools, Incorporated, consists of making a series of cuts at pre-determined intervals with one trip into the well, then going in with a wash-over string and recovering each section of cut casing without withdrawing the string from the hole. When the recovered casing is being removed, the wash-over pipe is suspended from slips and the casing is withdrawn through it.

Advantages of New Method

This method of recovering casing from dry holes has the following advantages over methods formerly used:

1. Rig time spent in breaking down and picking up the wash pipe is very greatly reduced.
2. Rig time is further reduced by making all of the cuts before washing operations are started.
3. The rental on wash pipe and special tools is reduced through decreased rig time.
4. There is less expense of conditioning mud due to the smaller number of trips into the hole and the shorter time required for the entire operation.
5. More casing can be recovered at a cost equivalent to or less than the value of the casing.

THOUSANDS OF FEET OF CASING

RECOVERED BY BROWN IN RECENT MONTHS

Several months ago when the shortage of oil well casing became acute, Brown Oil Tools, in cooperation with the industry, began using a casing recovery method that would make the recovery of casing from non-productive wells commercially feasible. Recent operations involving that method prove conclusively that it may be considered a valuable contribution toward the solution of this critical wartime problem.

If you are concerned with the procurement of oil well casing and you have non-productive wells from which casing can be salvaged, call Brown Oil Tools today for complete details.

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December Wildcatting Yields But One First Class Field

DECEMBER brought a continuation of the unsatisfactory wildcatting results which were common throughout 1942. Less than two thirds as many wildcats were completed as the minimum monthly average regarded by the government as essential, and the discoveries were almost unanimously of secondary or minor importance, only one prospective first class field having been found. Only 201 wildcats were completed in the United States during the month, compared with a needed monthly average of 333 as called for the OPC program for 1942.

While the volume of wildcat drilling was less than two thirds as great as desired, the percentage of productive tests was 17.9, or almost the same as the 19 percent assumed by the government agency program, the 201 completions having yielded 19 new oil fields, 3 distillate areas, 4 gas areas, and 10 new pays in established fields, a total of 36 productive wells along with 165 dry holes.

The 36 productive wildcats compared with 62 per month sought in the OPC program. Both oil and gas discoveries fell below needs as total completions were far below the goal. The 32 December oil discoveries (new fields, distillate and new zones) compared with 52 oil-producing wildcats sought monthly by OPC. The 4 new gas areas opened were in contrast with 10 desired.

One Strike in Illinois

Not only was the number of productive wildcats lower than desired, but the quality of discoveries was predominately low. Out of the 36 discoveries only one stood out as a prospective important field. Another was of importance because of its remote location from previously established production. Other strikes appear small at present.

The one important strike was the Quitman field found in Wood County, East Texas, 2½ miles northwest of Quitman and 7¾ miles southwest of the young and important Coke field, same county. The discovery well flowed 181½ barrels of 43-gravity oil in 6 hours, or at the rate of 726 barrels per day through a ¼-inch choke, tubing pressure 595 pounds and casing pressure 660 pounds, gas oil ratio 316/1. Production was from perforations in Paluxy sand, Upper Trinity, Lower Cretaceous, at 6280-6310 feet, with bottom at 6544 feet. This strike is due to develop into a major field, extending northeast-southwest, with prospects for additional pay or pays in Lower Trinity series. The field was found through subsurface geology and geophysics, which outlined an anticline.

Electric log revealed 29 feet of broken pay and 12 feet of highly saturated Paluxy sand that tested 47 percent unoccupied space on laboratory analysis of core. Except for three tracts of 181 acres or more, all acreage in prospective producing territory is chopped up into comparatively small leases.

Included herewith, although actually a late-November discovery, is the East Strand new field (or extension to Strand), 1 mile east of Strand field, Kern County, San Joaquin Valley, California, tentatively estimated to have added at least 5,000,000 barrels to reserves.

Mississippi was promised a new oil field by a 125-barrel pumper in Clarke County, but latest reports indicated the well had sanded up. The test is about 85 miles from nearest production. Because of its location in eastern Mississippi it is likely to cause considerable prospecting that probably will extend into Alabama.

One Important Strike

One new shallow oil field and new productive zones in three established fields represented the fruit of completing 23 wildcats in Illinois during December. (Data are not available yet on extensions that may have been made to proved fields through outpost tests.)

In Kansas 5 new oil fields were discovered during December, each in a different county, from 33 wildcat completions. Initial production was around or under 50 barrels per day for each discovery.

The month's limited success for Oklahoma included 1 new oil field, 1 new gas field and a new pay in a single established field. Twenty-two wildcats were completed. The new oil field, in Pottawatomie County, was not promising, the discovery well making as much water as oil from Viola lime.

In North Texas, Wise County gained its first oil production, which, however, barely qualified as a commercial producer. Other North Texas successful prospecting apparently found only negligible reserves.

Results of Wildcatting in the United States in December, 1942

This report embraces approximately one full month's wildcatting, although not exact results for calendar month. It includes some wells completed in late November, but omits some completed in late December.

State or District	PRODUCTIVE WILDCAT				Wildcat Failures	Total Wildcats
	Oil	Gas	New Pay	Total		
Arizona	..	..	..	..	1	1
Arkansas	..	..	..	..	1	1
California	1	..	..	1	10	11
Colorado	..	..	..	..	1	1
Illinois	1	..	3	4	19	23
Indiana	..	..	..	..	4	4
Kansas	5	..	..	5	28	33
Kentucky	..	..	..	..	4	4
Louisiana:						
North	1	..	..	1	2	3
South	*3	..	3	6	..	6
Michigan	..	1	1	2	7	9
Mississippi	1	..	..	1	3	4
New Mexico	1	..	..	1	6	7
Oklahoma	1	1	1	3	19	22
Texas:						
Eastern	1	..	..	1	9	10
North	2	..	2	4	10	14
West Central	1	1	..	2	8	10
West	..	..	..	..	7	7
Panhandle	..	..	..	..	1	1
Upper Coast	2	..	..	2	9	11
Lower Coast	2	1	..	3	4	7
Southwest	..	..	..	..	8	8
South Cent.	..	..	..	..	4	4
Total U. S. in December	*22	4	10	36	165	201
Total U. S. in November	18	8	11	37	207	244
Total U. S. in October	33	5	12	50	206	256
†Monthly Averages Sought by Government for 1942	52	10	..	62	272	333

* Three distillate area discoveries in South Louisiana included with December oil discoveries.

† OPC program called for 4,000 wildcats in 1942, including 624 to produce oil, 116 gas, and 3,260 dry holes.

New Oil and Gas Fields and New Pay Horizons Discovered in the United States

County	Field	COMPANY, WELL AND LOCATION	Miles (Direction) from (—) Pool	Miles from Pipe Line	Date Spudded	Dated Completed	Total Depth (Feet)	PRODUCING FORMATION: Completion Horizon (Feet)	PRODUCING FORMATION: Name, Kind and Age	INITIAL PRODUCTION: Method	INITIAL PRODUCTION: 24-Hr. Rate, Bbls.	INITIAL PRODUCTION: Choke (Inch)	Gravity of Oil	Type of Structure	Method of Discovery
		CALIFORNIA—New Oil Field													
Kern	*Strand, East	Tide Water's KCL 56-8, 1650′ N, 330′ E S½c 8-30-26				11-29-42	8207	8100–8187	Stevens sand; Miocene	Flow	1721		33.8		
		ILLINOIS—New Oil Field													
Montgom'y	Mt. Olive	W. R. Holmes's Neimann 1, NW SE SW 29-8N-5W	11	2	8-29-42	12-15-42	602	600	Sandstone, Penn.	Pump	40		33.2		
		ILLINOIS—New Pays													
Wabash	Friendsville	W. E. Bailor's Liddle 3, NW SW SW 26-1N-13W				12-22-42	1771	1759	Biehl sandstone, Penn.	Pump	50		31*		
Wayne	Geff	Schulte & Wix's Atkinson 2, SW NW SE			10-12-42	12- 1-42	3250	3234	McClosky limestone, L. Miss.	Pump	187		36.7		
White	Stokes	Pure Oil's Pyle Consolidated 2, SE SW SE 18-6S-9E			11- 1-42	12- 8-42	2915	2906	Aux Vases sandstone; Chester	Pump	152				
		KANSAS—New Oil Fields													
Barber		Great Lakes Carbon Co.'s Welsh 1, NW SW SE 30-31-15W				12-22-42	4249	4249	Douglas (Penn.) sand		50				
Barton		Mid-Continent Petr. Corp. & Tom Palmer's Harrison 1, NW cNE 18-20-13W				12- -42	3534	3528–3534	Arbuckle lime		51		36.5		
Butler		J. J. Lynn's Vandenberg 1, SW SE NW 35-27-6E				12- -42	2131	2118–2131	K. C. Lansing lime		45				
Harvey		H. M. Williams' Stuckey 1, CNE NE 3-23-4W				12- 2-42	3277	3213–3277	Mississippi lime		8				
Pratt		Hollow Drilling Co.'s 1-B, SW SE SE 29-26-12W				12- -42	4289	4268–4289	Arbuckle lime		67				
		NORTH LOUISIANA—New Oil Field													
Bossier	N. Carterville	H. L. Hunt's Nebo Oil Co. 1, SW SE 3-23N-12W			10- -42	11- -42	6386	6029	Pettit lime, L. Glen Rose, L. Cretaceous	Flow	230	¼	38		
		SOUTH LOUISIANA—Distillate Fields													
Acadia	Branch	Union Sulphur Co.'s J. P. Gueno Est. 1, Sec. 51-8S-2E			9- 2-42	Still testing	10447	10410	Miocene sand; Miocene	Flow	2400		51.0		Geophysics.
St. Landry	Krotz Springs	Gulf Refg. Co.'s Haas-Hirsch 1, 3008′ S, 188s′ E, NW Cor. Sec. 21-6S-7E			8- 7-42	Still testing	11398	9217–9220	Miocene sand; Miocene	Flow	204				Seismic.
Vermilion	Fresh Water Bayou	Union Oil of California's La. Furs 1C, SE¼, NW¼ Sec. 33-16S-2E			8- 8-42	11-30-42	11985	11120	Basal Miocene sand, Miocene	Flow					Geophysics.
		SOUTH LOUISIANA—New Pays													
Calcasieu	Vinton	Union Oil of Calif.'s Matilda Gray 3G, 1630′ E, 3785′ SL Sec. 33-10S-12W			10-10-42	11-27-42	5360	4908–4914	Miocene sand; Miocene	Flow	127	1/8		Salt dome	
Calcasieu	Lockport	Mag. Pet.'s Farquhar Unit 1, 733′ N, 594′ W of SE Cor. NE¼ Sec. 8-10S-9W			8-29-42	12- 3-42	8178	3193–3195	Pliocene sand; Pliocene	Flow	Gas	⅜	Gas	Salt dome	
Vermilion	Whitelake	Union of California's La. Furs 6-A, Sec. 15-15S-1E			11- 9-42	12-12-42	8561	6808–6813	Miocene sand; Miocene	Flow	192		36.9	Deep seated dome	
		MICHIGAN—New Gas Field													
Mecosta	Fork	Belvidere Oil Co.'s State 1, C NW 11-16N-7W	10	10	11- 7-42	12-22-42	1489	1484	Stray sand, Sandy lime, Miss.		†1				Sub-surface.
		MICHIGAN—New Pay													
Missaukee	Norwich	Sun Oil Co.'s Horner 3, S½ NE NW 14-24N-5W				12- 1-42	3096	3082–3090	Dundee lime	Swab	33				
		MISSISSIPPI—New Oil Field													
Clarke		Irion Drlg. Co.'s Long-Bell 1, SW SE SW 10-2N-16E	85		10- -42	12- -42		3679	Eutaw sand	Pump	125				
		NEW MEXICO—New Oil Field													
Eddy		Yates & Stroup's State 1, C SW NW 16-19S-30E				12- -42			Permian	Pump	20		23.5		
		OKLAHOMA—New Oil Field													
Potta-watomie		Cities Service Oil's Goodin 1, NE SW 23-8N-4E				12- 1-42	4560	4283–4338	Viola lime, Ordovician		50				
		OKLAHOMA—New Gas Field													
Lincoln		Mid-Continent's Bonebrake 1, NW NE 32-17-5E				12-21-42	3452	3431–3452	Skinner sand		†26.4				
		OKLAHOMA—New Pay													
Stephens	Velma	Skelly Oil Co.'s Frensley 1-C, SW NE SW 25-1S-5W				12- -42	1650	1502–1650		Swab	100				
		EASTERN TEXAS—New Oil Field													
Wood	Quitman	Delta Drlg. Co.-L. B. Benton's Goldsmith-Shell 1, 633′ N, 660′ E of 67½-ac. lse., Purse Sur. 2½ mi. NW Quitman			9-15-42	12- 1-42	6544	6280–6310	Paluxy sand, Upper Trinity	Flow	726	¼	43	Anticline	Subsurf.-Geophysics
		NORTH TEXAS—New Oil Fields													
Montague	Ketchum	Continental Oil Co.'s J. A. Ketchum 1, 330′ NW, 990′ SW lines Blk 43, Hill CSL Sur., 2 mi. E Bowie			7-27-42	12- 9-42	7506	3333–3336	Canyon sand, Penn.	Pump	36		37	Anticline	Seis. & Subsurf.-Geol.
Wise	Park Springs	Stanolind's Dovie Menasco 1, 707′ E, 669′ S Sec. 9, Falls CSL Sur. 1½ mi. NW	6½	3		12- 9-42	7310	5790–5818	Bend sandy-lime, Penn.	Pump	92		38.8	Anticline	Geol.
		NORTH TEXAS—New Pays													
Clay	Watson	Whitaker Oil Co.'s J. L. Gragg 1, 933′ N, 467′ W TE&L Co. Sec. 2672			10-10-42	12- -42	3680	3655–3676	Strawn sandy-lime, Penn.	Pump	120	None	40	Anticline	
Throck-morton		A. R. Matthews et al's Brockman 1, 330′ out SWc Sec. 94, Comanche Indian Reserve				11- 9-42		728–734	Cisco	Pump	10		38		
		WEST CENTRAL TEXAS—New Oil Field													
Coleman		Cornelius Kroll-E. S. Bahney's Starnes 1, 2350′ N, 2850′ W lines GH&H Sec. 2, Blk 1, 5 mi. SE Coleman	⅞	⅞		12-19-42	2020	2000–2018	Canyon sandy-lime, Penn.	Pump	12		38	Anticline	Geology.
		WEST CENTRAL TEXAS—New Gas Field													
Parker	Darnell	Walter K. Jones et al's Gus Darnell 1, 660′ NWc Sec. 173, T&P Ry. Sur. A-1363, 2 mi. SW Toto				12- -42	6126	3214–3240	Canyon lime, Penn.		†0.89			Anticline	Seismograph.
		TEXAS GULF COAST, UPPER—Oil Fields													
Austin	Orange Hill	Ohio Oil Co.'s Roy Kaechely 1, 660′ fr. SE&NEI of 250-ac. tr., Vital Flores Lge.			7-15-42	11- 8-42	10104	9270	Wilcox sand; Eocene	Flow	105	¼	44.3		Geophysics.
Matagorda	South Buckeye	United North & South's L. V. Stoddard 7, 1189′ E. of e'ly line of L. L. Lambert 64-ac. tr., 3458-ac. tr.			11- 7-42	12-12-42	8598	8107	Frio sand; Oligocene	Flow	243	12-64	36.6		Subsurf.-drlg.
		TEXAS GULF COAST, LOWER—Oil Fields													
Bee	Tynan	Stanolind's Ludvika Ulke 1, 788 ft. NW H. Williams Sur.			11-30-42	12-30-42	4753	4197	Vicksburg sand; Oligocene	Flow	35		23	Faulted	Subsurf. Drlg.
Jackson	MustangCreek	Guy I. Warren's O. W. Freeman, 660′ NW 125-ac. lse., Wm. Menefee Sur. A-53			10-21-42	11-16-42	6651	6641	Frio sand, Oligocene	Flow	115		31.8	Faulted	Geophysics.
		TEXAS GULF COAST, LOWER—Gas Field													
Jim Wells	S.W. Orange Grove	H. R. Smith & H. J. Mosser's Roth 1, 467′ NW Tr. 83, G. J. Reynolds Sur. 126		3½	8- 9-42	12-10-42	5405	3240	Frio sand; Oligocene		†30			Faulted nosing	Subsurf.-Geol.

* Approximately 1 mile east extension to Strand field. † Million cu. ft. of gas.

Savings in production costs, avoidance of frequent redrilling jobs, and higher production rates offset installation and remedial expenses sufficiently to allow recovery of Wilmington proved crude reserves.

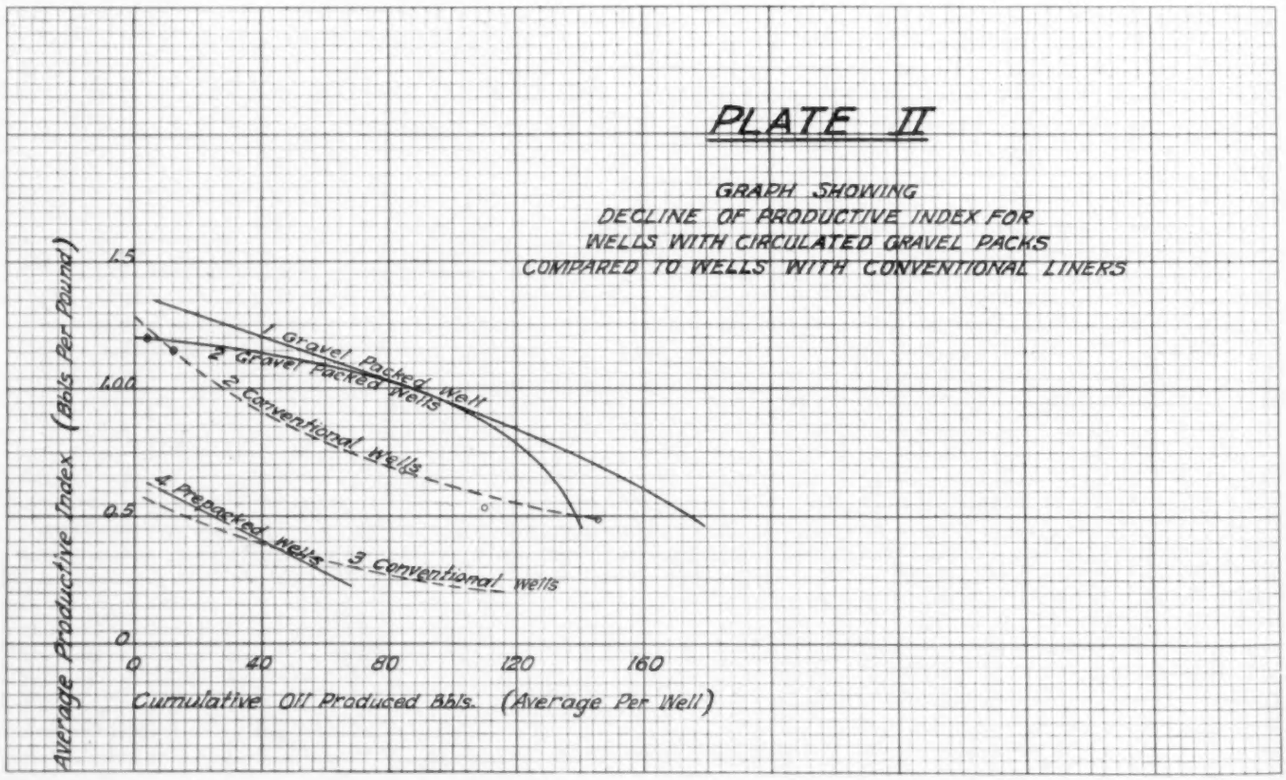
Performance of Unconsolidated Sand Wells Using Gravel Packing

By READ WINTERBURN, Petroleum Engineer,
Union Pacific Railroad Company, Los Angeles, California

BY EARLY 1939 it was apparent that operating problems caused by the fine unconsolidated character of the producing sand in the Wilmington field, California, would be a serious obstacle to the efficient recovery of a great part of the large oil reserves which had then been proven. Collapsed liners, the necessity for frequent redrilling and cleanout jobs, pulling of wells to repair and replace pumps, and the necessity of restricting production to avoid excessive entry of sand into the hole were resulting in production costs which exceeded income from a number of wells. During 1939 it was found that gravel packed liners afforded an effective means of preventing entry of sand into the well, and a campaign of redrilling started which has continued to the present. At the same time, renewed activity in the drilling of undeveloped portions of the area followed. Application of gravel packing to wells at Wilmington has been described in a preceding article (THE OIL WEEKLY, January 11, 1943). The performance of these wells will be discussed in this article.

Performance of wells using gravel-packed liners and prepacked liners has been studied from the standpoint of productive characteristics as reflected in subsurface pressure measurements and actual production records.

Plates II and III show in graphic form rates of decline of productive index (barrels per day per pound per square inch drop in mean pressure opposite the producing zone) plotted against cumulative production for wells with circulated gravel pack and prepacked



liners as compared to wells with conventional liners having comparable initial indices and producing zones of equal thickness.

In the case of the circulated gravel packs it is noted that the curves show an initial rate of decline which is less than or equal to that of conventional wells. In the later stages the circulated packs show nearly constant or accelerated decline while in the conventional wells the tendency is for the rate of decline to diminish.

Wells with prepacked liners exhibit more rapid initial rate of decline of productive index, decreasing in later stages. Throughout the history available up to now, the rate of decline has remained more rapid than in comparable wells with conventional liners.

In general, it has been observed that wells gravel packed with mud as a circulating fluid have considerably lower initial productive indices than comparable wells with conventional liners. A few wells which were gravel packed with oil as a circulating fluid have apparently exhibited better initial productivity although data are not available to permit direct comparison with conventional completions made at the same time.

In the study of actual production performance 106 wells in the Wilmington town-lot area were considered. It was found that 92 of these wells had been completed during the original drilling campaign in 1937 and early 1938. Ninety of these original completions were made with conventional liners and two with circulated gravel packs. Of the 90 wells originally completed with conventional liners, 58 had been re-drilled and recompleted with prepacked liners by September 30, 1942.

The remaining 14 wells were initial completions with prepacked liners made during the period from 1939 to 1942. Of the 72 wells equipped with prepacked liner it has been necessary to redrill only 2. The following tabulation shows the production of these wells for September 29, 1942:

	Total No. of Wells	No. of Wells Producing	Average Production Per Well[2]	Total
Prepacked Liners	72	69	71	4,928
Circulated Gravel Pack[1]	2	2	45	90
Conventional Liners	32	26	45	1,159

[1] These wells used gravel too large to completely screen sand.

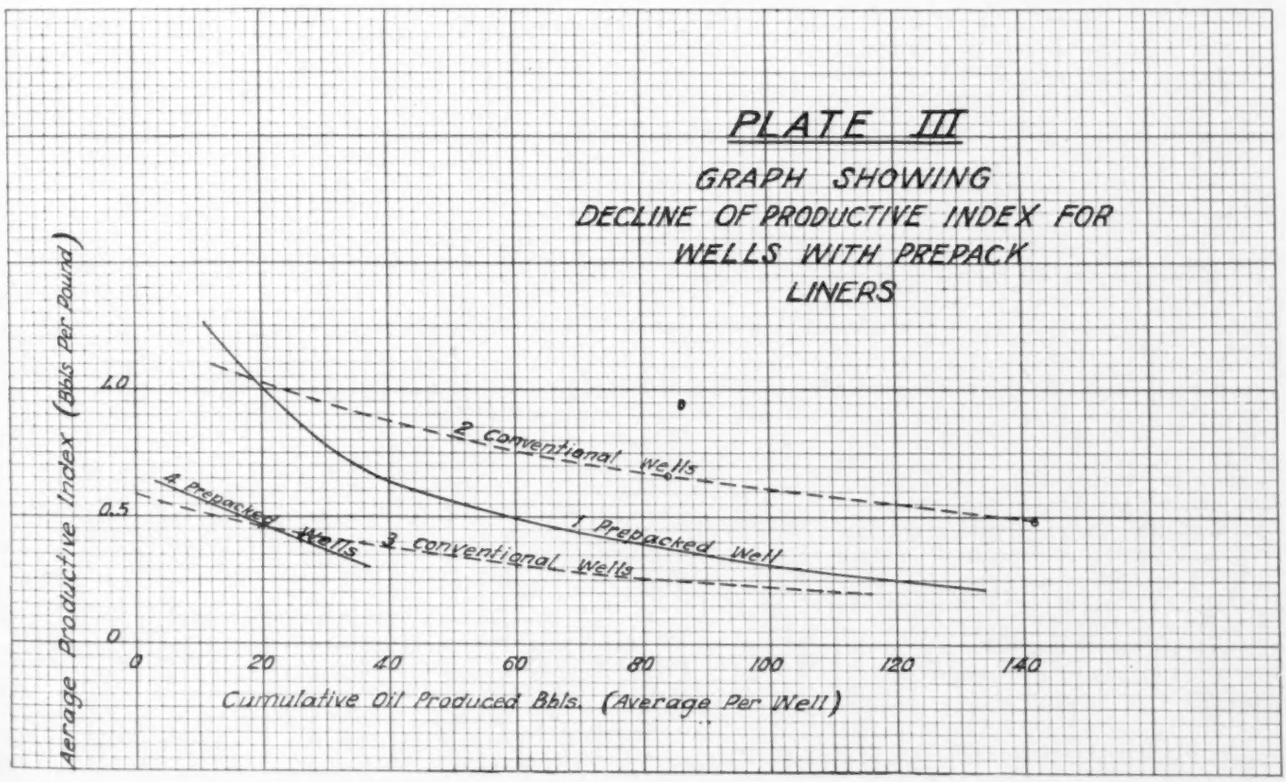
[2] Average of wells actually on production on September 29, 1942.

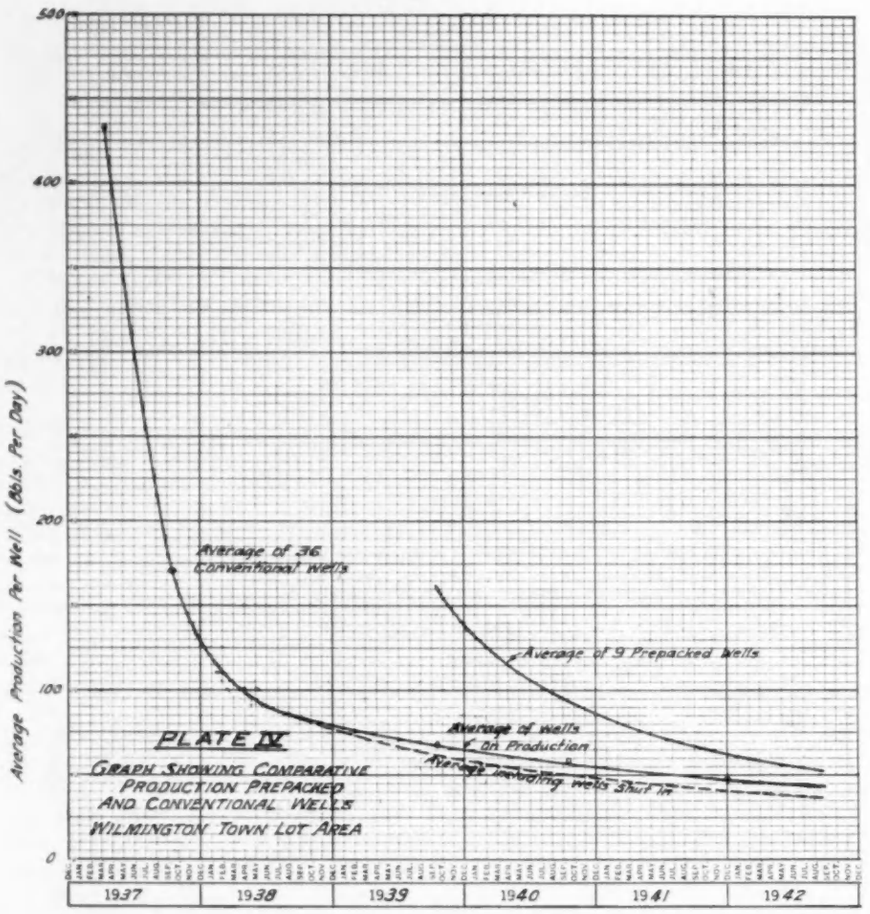
From this study it is seen that 64 percent of the wells originally completed with conventional liners had been redrilled and equipped with prepacked liners and that 80 percent of the total production is produced with prepacked liners. These percentages are believed to be representative of conditions over the whole Wilmington town-lot area. The greater average daily production of the wells with prepacked liners is in part due to the fact that they have been placed on production more recently.

Plate IV shows average production of 9 prepacked wells completed approximately 3 years ago as compared to the 32 wells still producing with the original conventional liners. This graph shows that the production rate from the wells with prepacked liners has been maintained well above that of the wells with conventional liners. However, the rate of decline of the prepacked wells is more rapid and it might be anticipated that at some time in the future the production of the prepacked wells would decline below that of the conventional wells. This would be based on the assumption that the production of the latter group would not be impaired by excessive sand trouble or collapse of liners.

Plate V shows production for a group of circulated gravel-pack wells compared to wells with conventional liners. The erratic behavior of the curve for the wells with circulated-gravel packs is due to the early rapid decline under flowing conditions followed by several months of steady rate on the pump until the middle of 1939 when the wells were allowed to flow at reduced rates until June, 1940, when all wells were placed on the pump.

The significant portion of these curves is that following June, 1940, since all the gravel-packed wells as well as those with conventional liners were produced continuously on the pump from that time on. Under these conditions it is apparent that the gravel-packed wells produced at higher rates but with a more rapid decline than the conventional wells until early in 1942 when the rate from the gravel-packed wells declined below that of the conventional





wells. This more rapid decline has continued to the present.

The production records indicate that the wells with circulated-gravel packs and prepacked liners are able to maintain higher average production rates than comparable wells equipped with conventional liners at least for a period of from three to five years after completion, in spite of the lower initial productive indices of circulated-gravel packs and the more rapidly declining indices of prepacked liners. This is explained by the fact that the wells with conventional liners must be restricted below capacity rates to avoid excessive sand production while the gravel-packed and prepacked wells may be produced at capacity from the beginning.

It could be expected that at some time the more rapidly declining productive indices in prepacked and gravel-packed wells would result in reduction of their capacity below the producible rates of wells with conventional liners and that prepacked and gravel-packed wells would decline to uneconomic rates before those with conventional liners, assuming that liners in the latter group remain in good condition.

As a matter of fact, the gravel-packed wells for which average production curves are shown in Plate V have apparently reached a point where their capacities are less than the comparable conventional wells.

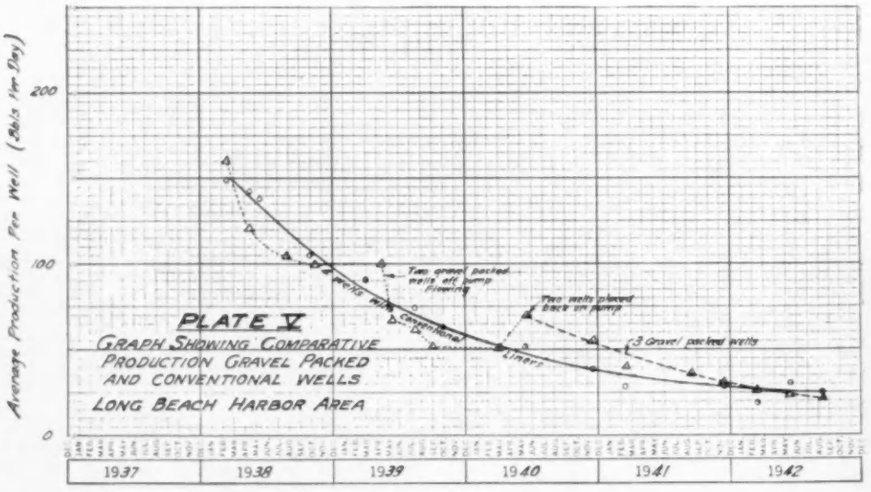
More rapid decline of productive indices in wells gravel packed or prepacked with gravel sufficiently fine to prevent substantially all sand from entering the well is believed to be due to plugging of the pores at the face of the gravel. A stable bridge of coarser sand grains would immediately form at this face as soon as production was started. Against this layer of coarse grains progressively smaller particles would bridge. Packing of extremely fine silt or disintegrated shale mixed with oil against the sand bridge, forming a sheath of low permeability, would be expected to take place continuously if all material were prevented from entering the well, whereas in wells with slotted liners or round holes which allow some material to enter the hole the continued or occasional movement of the material around the liner would tend to break up the sheath of low permeability.

It is anticipated that wells using gravel to completely screen sand from entering the hole may decline to uneconomic rates of production long before the reservoir has been depleted. In this case, it will be necessary to develop some method of washing which would break down or remove the plugging material, to pull and replace the liner, to remove the gravel sheath surrounding the liner, or to redrill the well in order to deplete the zone.

With this in mind, many of the later gravel-packed and prepacked wells have used liners of a size which would permit easy washing over and recovery through the casing used for a water string, and some of the prepacked wells have been equipped with an outer sheath made of drillable material which can be milled up and circulated out of the hole together with the gravel.

Recently 460 feet of 5¾-inch liner prepacked to 6¾-inch O.D. was recovered from a well which produced large quantities of water upon completion. The well was killed with mud and the liner thoroughly washed with a high-pressure perforation washer. Five cuts were made with an inside casing cutter and the liner was recovered in four sections with a spear and jars. The amount of jarring required varied from a few minutes to three hours.

The well had produced intermittently for five weeks before the liner was recovered. The liner, which was of the type using punched plate with longi-



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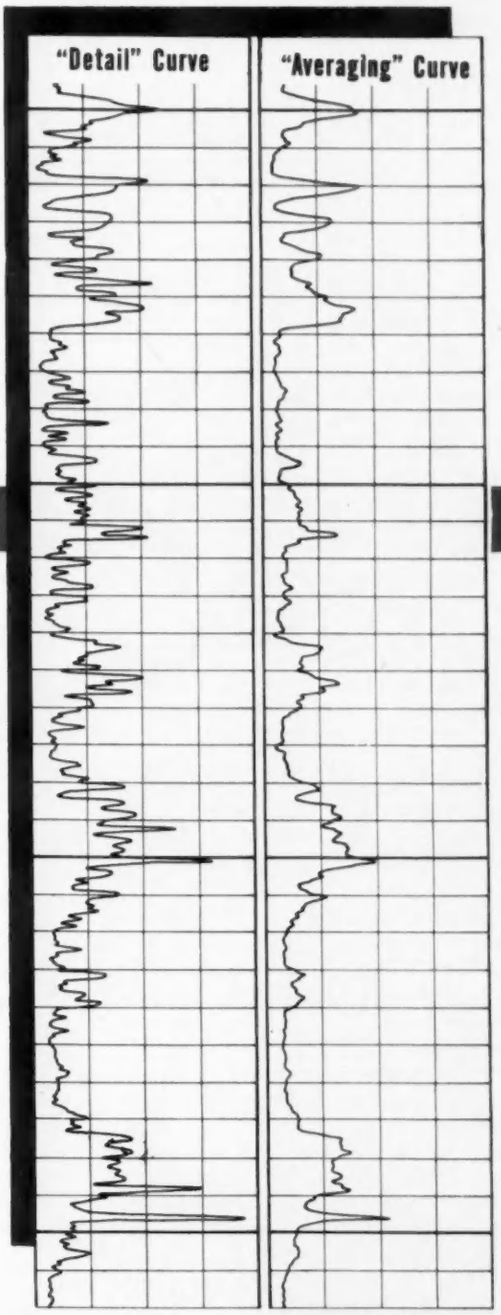

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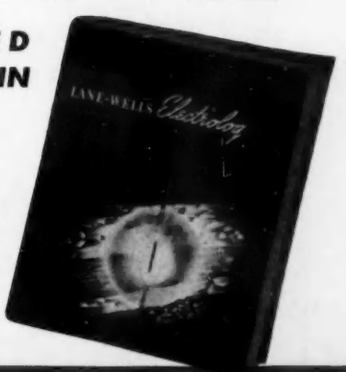

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tudinal supporting ribs running the entire length of each joint was undamaged upon reaching the surface, the cuts being made in the blank pipe at the end of the joints.

Whether prepacked liners could be similarly recovered from wells which have been on production for several years can only be determined by actual demonstration. It might be expected that washing over would be necessary. This would require greater differential in size between casing and liner than is common in Wilmington wells.

Inspection of the recovered prepacked liner showed that a large percentage (probably about 70 percent), of the perforations in the outer sheath were plugged with mud in spite of the fact that the entire liner had been thoroughly washed after reaching the surface with a high-pressure perforation washer. Thus it may be assumed that the liner would be in similar condition after being washed in the hole before putting the well on production.

In certain sections of the liner, a number of the perforations in the outer sheath not plugged with mud were filled with oil-saturated silt and fine sand. No material which had been present in the hole around the outside of the liner, aside from that in the perforations, was present when the liner was examined.

Since the liner was thoroughly washed in the hole before recovery and again at the surface, it is probable that many more of the slots originally were filled with this material.

If hydrocarbon substances accumulating in the silt and fine sand which is present in the slots and around the liner are a factor in reducing the permeability, it is possible that washing with some effective solvent would improve productivity of wells which had declined to low rates.

Temporary increases in productivity of some gravel-packed wells have been effected by forcing hot oil (200° F.) out through the perforations and into the formation. However, the wells ordinarily decline to their former capacity within a few weeks or months.

A study of the performance and maintenance costs leads to the conclusion that savings in production costs, avoidance of early and recurring redrill jobs and greater amounts of oil recovered during the early years in the productive life of the wells will much more than offset the cost of any remedial work that may be necessary to maintain prepacked and gravel-packed wells on production until the field is depleted. Greater recovery in a given time is especially important in closely drilled competitive areas where oil not produced is largely lost to neighboring properties.

The foregoing data and conclusions are based entirely on performance of wells using a gravel size chosen so as to exclude substantially all sand from entering the well. There is some basis for assuming that the decline of well capacity to uneconomic rates before depletion of the reservoir might be avoided without loss of the benefits of gravel packing by choice of gravel sizes sufficiently large to permit the continuous entry of small quantities of sand with the oil.

Several wells in which liners were gravel packed by circulation have used gravel larger than that required for complete screening of sand.

Seven such wells have been on production since early in 1938. All these wells have produced some sand and have occasionally required cleaning out, but on the whole have experienced much less trouble than wells with conventional liners. Consequently production costs have been much lower.

In August, 1942, one of the seven wells was redrilled after the liner had collapsed. This well originally was completed in January, 1938.

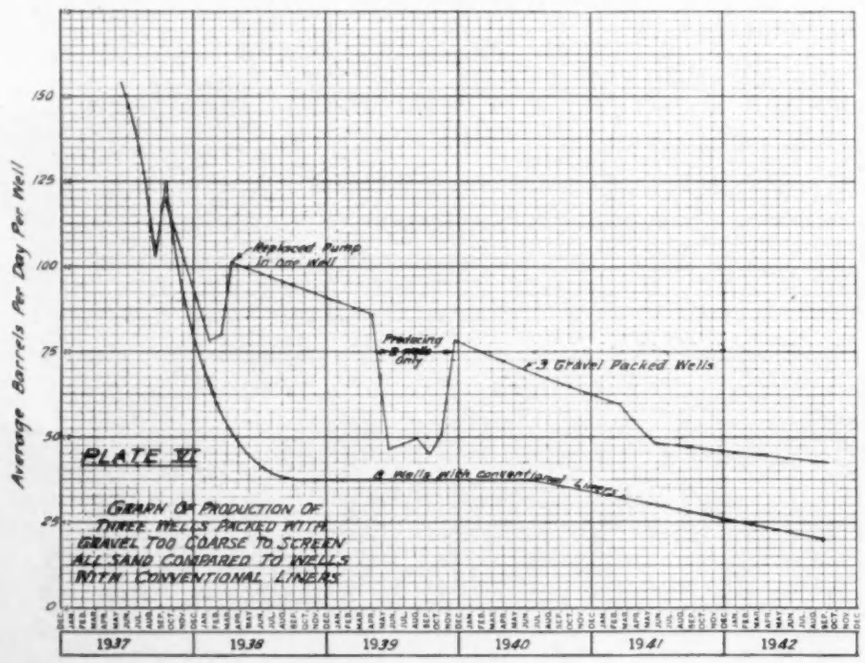
Plate VI shows average production of three of the seven wells compared to eight wells with conventional liners on offsetting properties. The gravel-packed wells have been able to maintain substantially higher rates of production over a five-year period. The accelerated rate of decline of the wells with conventional liners following July, 1940, is believed to be due to the fact that at least three of the wells have reached the stage where they ordinarily would have been redrilled. The operator has attempted to maintain these wells on production with the result that he is now able to produce only from 5 to 10 barrels per day from each well.

It is interesting to compare the performance of these gravel-packed wells with the three wells whose production is shown in Plate V. Since June, 1940, when both groups of wells were averaging 70 barrels per day per well the three wells packed with gravel small enough to exclude all sand have declined to 22 barrels per day per well while the wells packed with coarse gravel have declined to 42 barrels per day per well.

During recent months a number of wells have been completed or recompleted with prepacked liners in which gravel has been used which is coarser than the maximum size necessary to completely screen sand. Most of these wells have not been on production long enough to provide comparative performance data upon which to base definite conclusions. However, it is apparent from results obtained that in prepacked liners there is much less latitude in the extent to which the gravel size may be increased without losing nearly all effect of retarding sand entry than in the case of circulated gravel packs. This is undoubtedly due to the thinner layer of gravel used in prepacked liners. Also in order to obtain reliable screening action it is necessary that there be at least three layers of gravel. The largest gravel used with satisfactory results in Wilmington wells is .187- to .270-inch.

The most positive benefits to be obtained from the use of coarser gravel have been reported from areas yielding wells of small initial production (50 barrels per day or less) of low-gravity, viscous oil from low-pressure sands where attempts to screen all sand have resulted in abnormally low initial rates or rapid decline to uneconomic rates of production.

Permeability of the gravel sheath is undoubtedly greatly reduced by the filling of interstices with sand which must occur when sand is not completely



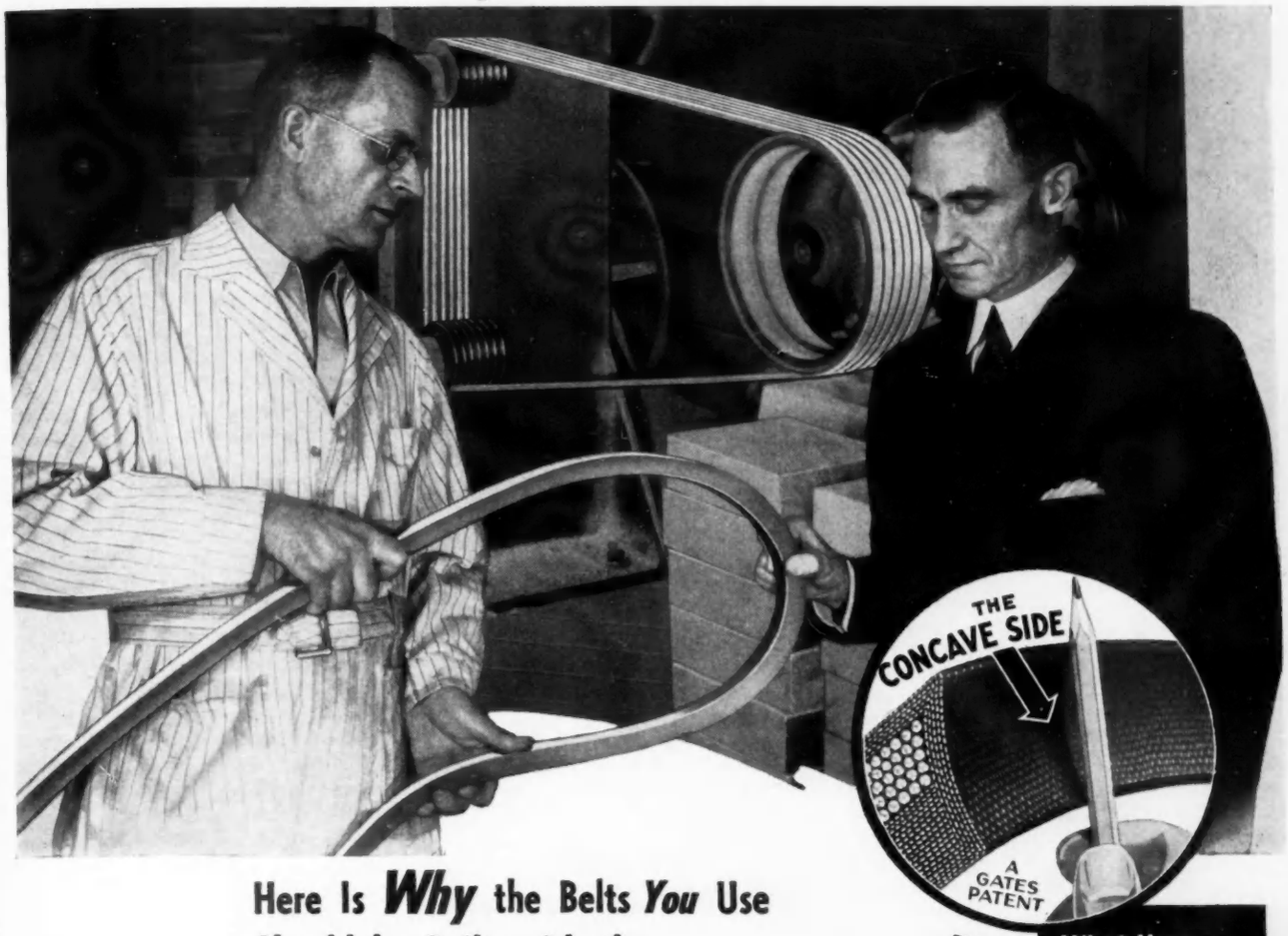


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FIG. 1

FIG. 2

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bridged at the face of the gravel. However, the greater restriction of fluid entry into the well caused by the accumulation of silt and disintegrated shale at the outer periphery of the gravel will control productivity in later stages. Thus it may be possible to maintain economic rates of production for longer periods in spite of entry of sand into the gravel interstices if this accumulation at the outer face of the gravel is prevented by continued removal of small quantities of sand.

Experience at Wilmington has demonstrated that:

1. Reduction of production expense, ability to produce at higher rates for several years, and elimination of the risk of sand abrasion and collapse of liners can be attached through the use of circulated gravel packs and prepacked liners in areas and zones presenting acute sand problems.

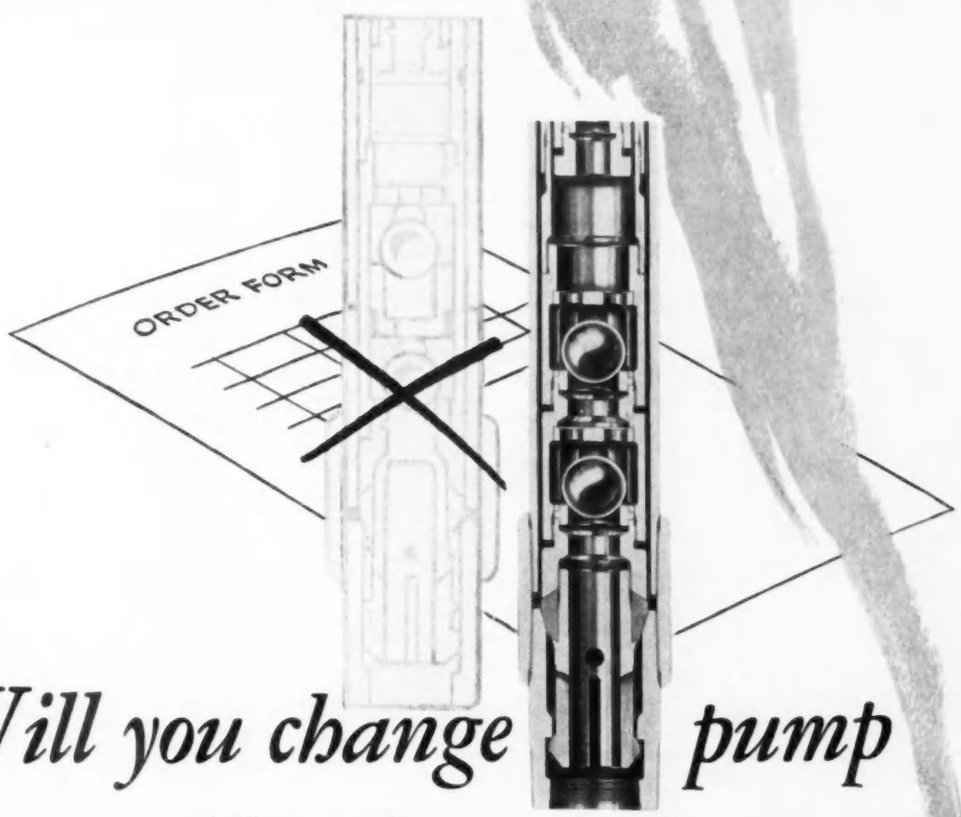
2. Where all sand is screened by the gravel pack, plugging at the gravel face may reduce the productivity of the well to uneconomic rates before the producing sands are depleted.

3. There is possibility of increasing the economic life of wells without necessity of remedial work by use of gravel large enough to permit production of small amounts of sand continuously. However, this practice entails increased operating costs and greater risk of eventual damage to liners.

Possibility of using smaller water strings and still providing ample clearance for washing over and recovery of liners with the same inside diameter in the case of the circulated gravel packs should be considered. This is illustrated by the fact that a 4-inch liner may be washed over through a 7-inch water string while the same liner prepacked to 5½-inch outside diameter would require an 8⅝-inch water string to permit washing over.

In deciding whether to select gravel designed to screen all sand or to permit small quantities of sand to be produced with the oil, no general rule can be stated. All experience bearing on the particular case under consideration should be reviewed. Those wells in which initial production rates of from 100 to several hundred barrels per day are anticipated and which experience has shown may be expected to have relatively long productive life before declining to uneconomic rates are in a position to benefit to the greatest extent from the minimum production costs and absence of risk of damage of the liner to be gained by complete exclusion of sand. On the other hand, low-pressure-heavy-oil zones yielding wells of small initial production afford the best opportunity for advantages to be gained from use of coarse gravel to permit some sand entry into the well.

Business is ~~as~~ un usual in the Oil Industry



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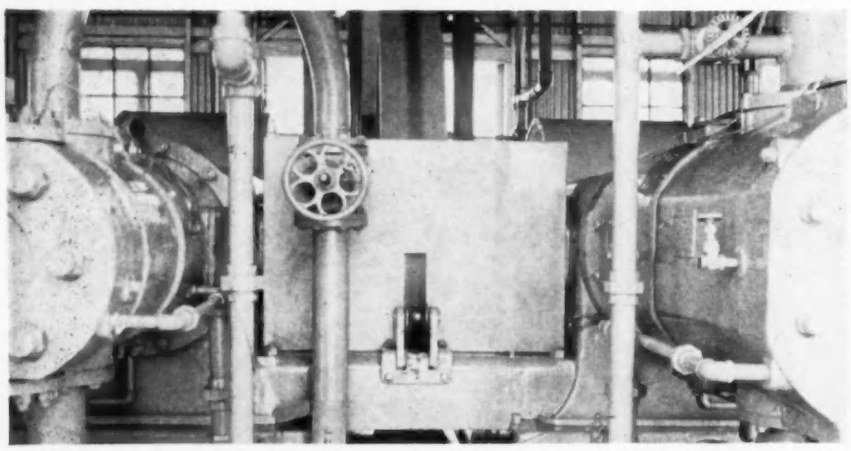
PRACTICAL OPERATING *Hints* FOR

1. SAFETY

Fixed Guard Prevents Flywheel Accidents

SO THAT the operator of a gas lift station will be safe when servicing the machine, and when jacking it over before starting, a substantial steel plate is attached to the spacer casting between the two bed plates of the twin compressor.

Since the type of machine to which this safety plate is attached has jacking slots in the rim of the flywheel, a narrow opening is cut in the guard behind the jack-handle roller support so that the guard need not be removed at any time, and thus becomes a permanent installation.



Gap between cylinders is closed at floor level by shield which blocks off flywheel and pit but which, carrying slot for jacking bar, does not interfere with ready setting for start.

The top of the plate extends high enough that if a man should fall against it when stepping on the concrete foundation while inspecting the operation, he will be prevented from falling into the rotating flywheel.

Placing of the guard across the spacer member was found to cut down on the number of "lost" tools which formerly, placed on the convenient support during overhaul, would be knocked into the flywheel pit, there to remain until rediscovered during the annual clean-out of the place.

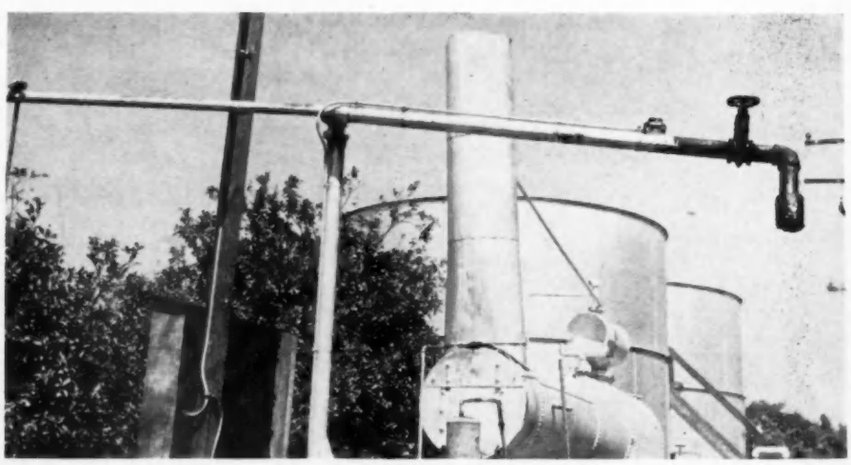
2 LOADING

Swivelled Pipe Riser Carries Handy Switch

A LOADING riser which can be used for handling crude oil, fuel or refined products may be equipped with a motor control switch near the cut-off valve so that only one man is necessary when a shipment is made. The riser is built in the conventional manner equipped with a swing connection at the top that connects to the spout which extends outward to the dome of the transport truck tank. An approved motor switch strapped or tack welded to the swing is attached to the control wiring which passes through conduit to the loading pump motor.

The motor may be situated at any convenient point near the stock tanks. When truck transportation is to be employed regularly and frequently, the manifold may be left connected to the pump suction line so that the truck driver is not required to leave his vehicle. Informed of the kind of material which he is to move, it is only necessary that he place the loading spout over the tank dome, open the control gate and turn on the motor, wait until the tank is filled, then shut off the motor and close the control gate.

Elimination of the lost motion between truck filling hatch and switch is found to insure correct filling of each tank compartment, without the slopping over or wastage of fluid which had been considered inevitable when working to insure proper gauge loading of the haulage unit tanks.



Mounting the switch controlling the delivery pump out on the truck filling line enables the driver to control flow into tanks and to cut stream without wasting space or fluid.

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THE PIPELINER

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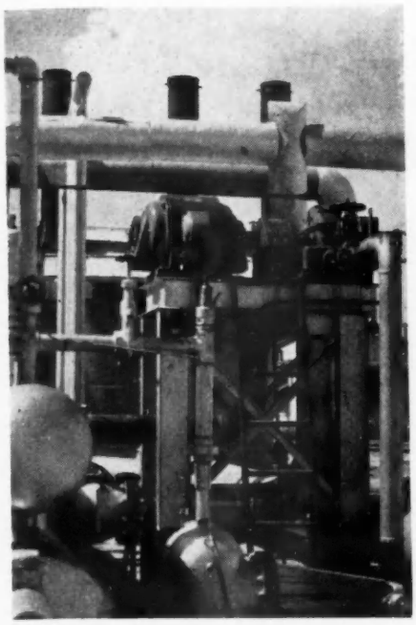
3. WASTE UTILIZATION

Turbine Profits from High Efflux Pressure



Power generating unit cut into outflow transforms excess pressure to usable current output.

WHEN large quantities of high-pressure fluid must be reduced to around atmospheric for waste or regeneration, mounting of a turbine in the stream may be made to pay dividends in the form of generated electrical energy.

In the installation pictured, soda ash and water is employed to extract hydrogen sulphide from natural gas prior to its being put into transmission lines. The pressure on the contact column is around 500 pounds, but before regeneration, zero pressure must be attained, requiring the installation of automatic valves to maintain the desired constant back pressure while reducing the head. This same result is attained with the turbine, without the former close supervision required of the valve installation, and with the power picked up through the turbine available to meet a portion of the plant needs.

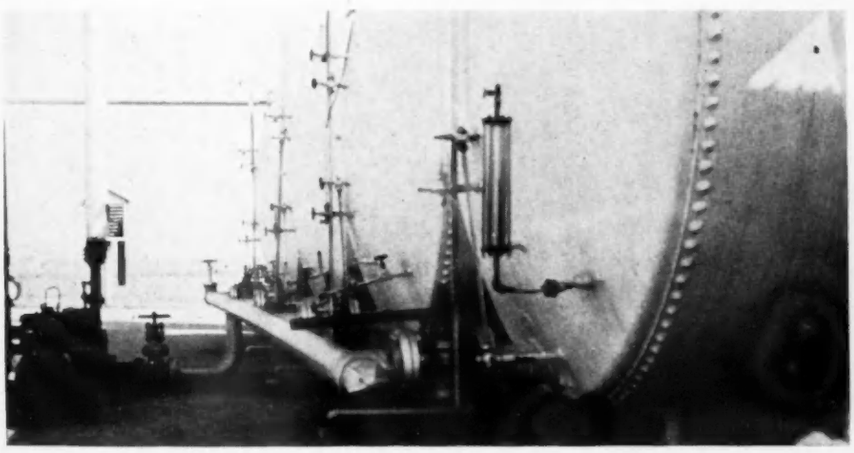
4. PUMPING

Oversize Manifold Aids Flow to Suction Valves

WHEN distillate or condensate is produced at a compressor station handling cycling or pressure-maintenance gases, the liquids recovered are normally of high gravity and are prone to form vapors at any drop in pressure, such, for instance, as that in a restricted line to the loading pump.

One company clears this difficulty by having all the 10 x 40-foot storage tanks equipped with 6-inch delivery flanges, tying these to a 6-inch manifold which extends through all fittings to the suction elbow on the transfer pump itself.

By thus insuring ample liquid flow with negligible pressure drop when the pump is in operation, the critical vapor pressure of the fluid is not crossed, and full pump filling and absence of pound or vibration assured.



Carrying large pipe across face of tank battery eliminates choke in low-head flow to transfer pump and insures proper priming of units at instant tank control valve is opened.

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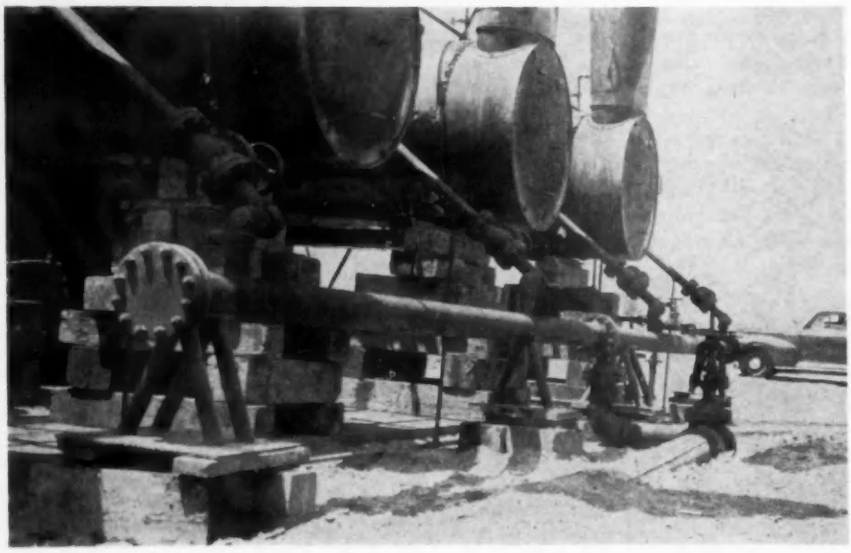
PRACTICAL OPERATING *Hints* FOR

1. STEAM LINES

Special Rests Carry Boiler Manifold



Prefabricated supports afford quick lining up of header and permit tie-in of boiler lines without imposing carrying and expansion stresses on the fittings in the boiler sheets.

EASE in maintaining the level of the steam header at the boiler setting is secured through the use of prefabricated, elevated and inverted saddles in which the header rests. These saddles, carried on four pipe legs in turn welded to a flat base, may be shimmed to level before the pipe be placed, allowing ample work space for tightening the flange or union connections between sections.

Supports such as these permit the entire line from boiler to header to be standardized, all joints save the one broken out for transportation being left unmolested as long as tight in service.

A header thus supported is protected against corrosion which sometimes attacks bare pipe laid along or buried in the ground at the boiler setting.

2. MATERIAL HANDLING

Tramrail and Trolley Aid Equipment Moving

A VARIATION of the usual platform for holding auxiliary equipment when the rig floor must be cleared of such units has been worked out by one drilling contractor which simplifies the handling of heavy equipment and reduces hard labor.

A separate platform is set up, far enough from the rig structure to permit passage way for a truck. Posts of this structure are carried high to take cross members from which may be suspended a heavy I-beam section, the outer, or derrick, end being supported on a similar set of supports at the floor opening.

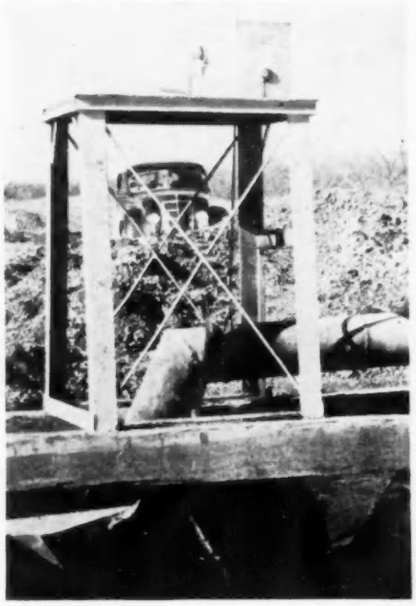
A trolley and chain block, operating on this elevated track, serves to unload the equipment trucks, transporting the units either to derrick floor or to auxiliary platform storage as desired.

A conduit, permanently attached to the rail and supporting members, permits the plugging in of auxiliary lights where desired and eliminates the hazard present when lighting circuits are festooned around other equipment and are thus exposed to accidental damage.

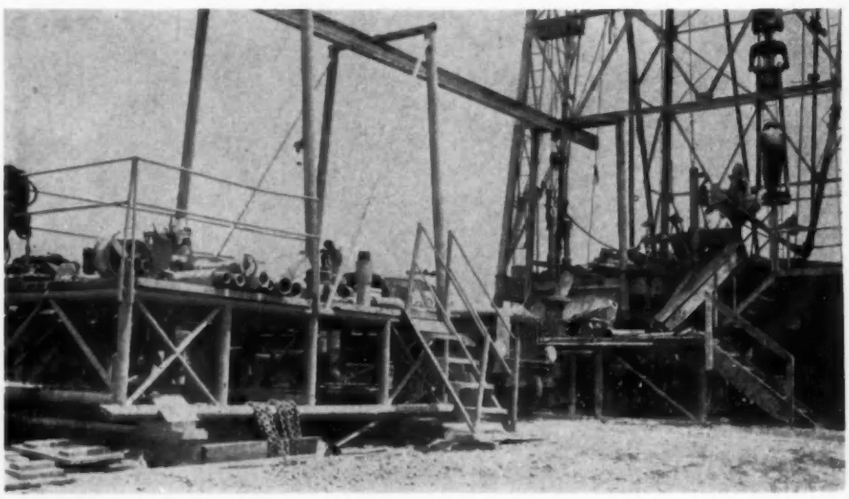
3. MUD LINES

Unitized Gear Unit For Suction Setting

ANY small steering gear unit which has a gear and worm control can be adapted for use at a drilling rig to raise and lower the mud pump suction foot valve. A small hand crank to replace the steering arm is employed to operate the unit after enclosing in a small metal case with feet for bolting to a wood top stand over the suction pipe. Part of the steering gear post remains on the unit,



Irreversible steering gear on self-supporting framework aids in obtaining desired mud flow.



Overhead I-beam ties derrick floor to separate storage rack and enables power handling of heavy equipment direct from truck to rig without tying up catline or drawworks lines.

THE DRILLING RIG

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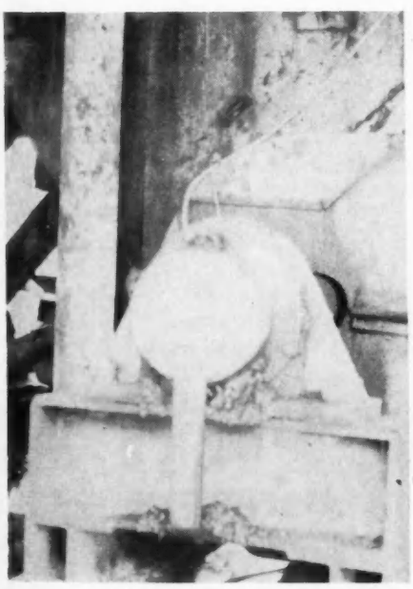
resting in a bearing attached to the case of the unit. A soft-laid wire line wrapped around the steering shaft connects the mud pump suction so that raising and lowering is an easy matter. Having a worm and gear movement, the position desired for the suction remains unaltered until the crank is again turned either way.

4. SAFETY

Removable Housing Protects Shaft End

PROTECTION of the outer ends of the shaft on a drilling engine set up in the substructure of a derrick may easily be provided and possible accidents thus averted.

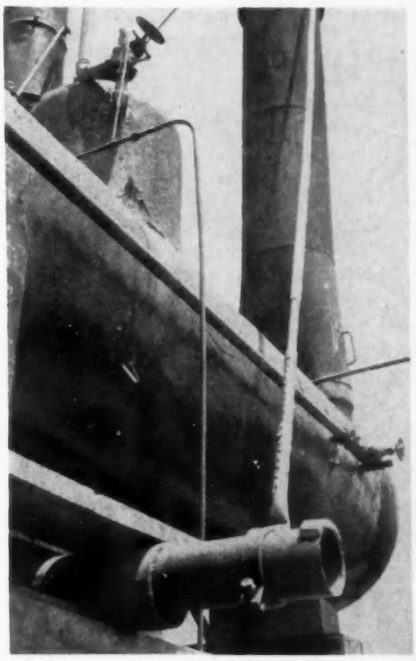
One form of protector consists of a cap or cover, welded up from light tank plate with a rim wide enough to cover the exposed shafting. To locate this unit a handle or support of heavier steel is welded to the "pan" section, the handle being bent at the proper point to allow the lip thus formed to rest on the subframe of the drilling engine base. Bolted at this point with a single fastening, the shield may easily be removed when necessary, but possesses sufficient rigidity to fend off flying objects, and sufficient coverage to prevent clothing becoming entangled by the moving shaft.



Shallow pan of tank steel and spacer arm provide adequate guard on exposed shafting.

5. RIGGING UP

Adjustable Supports Speed Stack Set-up



Slip joints in pipe braces facilitate accurate alignment and quick spotting of stacks.

AN ADJUSTABLE stack brace is made by using a section of 1¼-inch pipe for the main portion, welding within the lower end a stub of 1-inch pipe, which in turn slips snugly into the 1¼-inch end formed to clamp around the lower anchorage.

By drilling spaced holes in the lower section, a similar hole through the 1-inch stub of the upper section may be aligned with one of the sleeve apertures, and a pin or bolt passed through to tie the two together at the desired length.

The anchorage at the base of the brace is secured by slipping a section of pipe through the larger unit used as boiler support, a lug or ear being welded to the outer end of the slip-joint section to retain the brace clamp in place.

By varying the spacing of brace and extension of slip-joint, any desired stack setting may be obtained and desired rigidity insured.

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Degasification of Coal Seams Would Give East Gas Fuel

Vertical wells could tap trillions of cubic feet of gas now absorbed in unmined coal, providing East needed fuel supply and also removing deadly firedamp mining hazard

IT MAY make the entire population of the northeastern part of the United States experience a considerable rise in temperature to know that while they are now suffering from cold and underheated apartments and places of business, due to lack of fuel oil, some 500,000,000 cubic feet of natural gas is being daily wasted in Eastern coal mining fields.

Such is the case, according to Leo Ranney, president of Ranney Oil Mining Company, of Columbus, Ohio, who, in an article on the "Degasification of Coal Seams—at a Profit," in the January issue of Mining and Metallurgy, monthly magazine of the American Institute of Mining and Metallurgical Engineers, declares that new developments in horizontal drilling may make it profitable to tap trillions of cubic feet of methane gas now absorbed in unmined coal.

Firedamp Is Valuable Natural Gas

Ranney points out that the mine-owners not only loses the value of the gas that escapes when pressure is reduced through the driving of entries into the coal seams, but that this same gas is the deadly firedamp which causes, by its explosions, tremendous loss of life.

"This natural gas," says he, "is the deadly firedamp of the coal mines, with a heat value of 1000 B.t.u.s per cubic foot. Some of our mines pour out 3,000,000 to 5,000,000 cubic feet of methane daily, and on days of low barometer one mine delivers to the surface 8,000,000 cubic feet per day, worth some $900. In one case 27 tons of air must be circulated through the mine for each ton of coal produced.

"The public," he continues, "never knows the tremendous cost of repairing a mine and its equipment after a serious mine disaster. But it does know that during 1940 in the United States some 275 miners lost their lives in major mine explosions. Within a few months after one of the recent disasters, damage suits were filed in excess of $2,500,000. Because of just one mine explosion (from gas) in Ohio a few years ago, the State Industrial Commission has paid to date over $1,000,000 to the families of the men destroyed and is still paying."

Ranney states that a careful study leads to the conclusion that the greatest gas fields of the East are in coal deposits. "In West Virginia one coal seam in one field contains upwards of two trillion cubic feet of sorbed methane—2000 cubic feet per ton of coal in place, and 20,000,000 cubic feet per acre. This free gas adds nothing to the value of the coal because it is so wild that it disappears immediately, even before the cars reach the tripple," he asserts.

"Many gas wells have been drilled into the Pittsburgh coal seam in southwestern Pennsylvania," continues Ranney. Also he tells of farmers in southeastern Ohio drilling wells into coal seams to provide a source of domestic gas. "Many of the holes," he says, "had an initial capacity of 50,000 cubic feet of methane per day. This gas was used and is being used for heating, lighting, and cooking. Flares were and still are kept burning. After 30 years many wells still produce 10,000 cubic feet per day from 1 foot of exposed coal, and still have a rock pressure of 1 to 30 pounds per square inch. Some individual wells have probably produced more than 100,000,000 cubic feet of methane gas."

New Horizontal Drilling Methods

In explaining the process by which these vast gas reservoirs can be tapped, Ranney says, "It is common knowledge that a vacuum applied in gas and oil wells may often be observed in selected holes several hundred, or even a few thousand, feet away. Coal seams vary a great deal laterally in texture and permeability, tight streaks alternating with porous streaks or feeders, so any vertical well therein may be good or poor. The main problem then is to penetrate these permeable streaks and bleeders, and to distribute a vacuum to many of them with each hole drilled.

"Distribution of the vacuum to the flow channels has at last been solved," he continues, "by our ability to drill horizontal holes 3000, 4000 or 5000 feet long and to control the elevation of the hole at any depth, to follow the contour of the coal seam. Such holes may be drilled radially from shafts, like spokes of a wheel, or parallel to each other from mine workings (tunnels), out into virgin coal, the holes in the latter case being spaced about 800 feet apart. These holes, according to Ranney, are cased with pipe for the first 400 feet, and then drilled and left uncased for as much as 5000 feet, back into the coal seam. A vacuum is then applied to the cased end of the horizontal hole, which draws off the gas. By this means the unmined coal is degasified, and the hazard of explosion is reduced to practically zero, and the mine owner has all the stored gas to sell or use.

Cost of Production

Ranney states that the over-all cost of producing gas from these horizontal wells in gassy seams is estimated at 5 cents or less per thousand cubic feet. "The selling price," he says, "would vary from 12 to 25 cents a thousand, depending upon the customer and the location. A recovery of 50,000,000 cubic feet should more than liquidate the cost of each well, and the operating cost from then on should be about 2½ cents per thousand cubic feet.

"In ordinary mining and marketing operations," he explains, "the gas is gone long before the coal reaches the furnaces; so removal of methane from coal in place (that is, in the mine) has no effect on market values. In average coal it may be assumed that a vacuum will recover 75 to 90 percent of the sorbed gas, so degasification becomes directly profitable.

"It is my belief," he concludes, "after 20 years of study given to this subject in North America and Europe, that a daily gas supply greater than could be delivered by a 24-inch pipe line can be obtained from the Eastern coal fields by this method, at a fraction of the initial cost of a long pipe line and one fourth of the operating cost of such a line. Moreover, a considerable quantity of this gas could be made available within a few months."

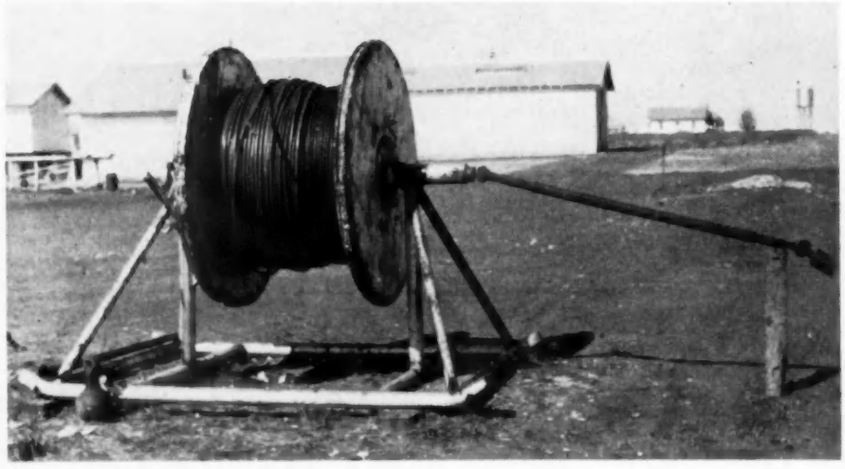
Portable Device Facilitates Field Spooling of Wire Lines

PROPER spooling and care of the drilling line will materially increase its useful life, and in these days of scarcities in the drilling equipment field, it is well worth the time and effort to build some form of permanent device that will facilitate such operations.

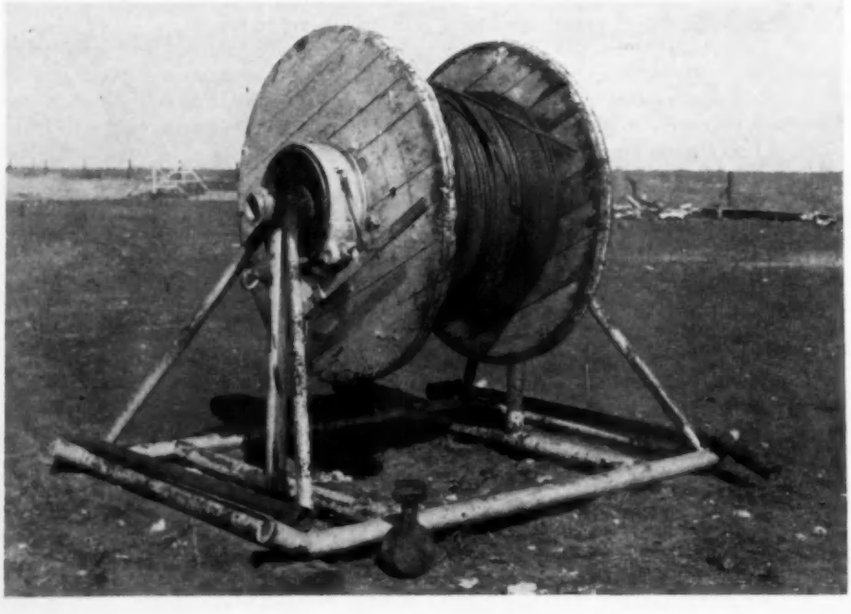
One company has designed a spooling device that greatly speeds up the work of spooling the heavy lines. Because it requires so little of the customary back-breaking work, it actually encourages the various crews to re-spool, inspect, or lubricate their respective lines at more regular intervals.

A spool was mounted on an elevated, skid-base support made from miscellaneous lengths of scrap 2- and 3-inch pipe. Resting on bearings on either end of the axle running through the spool, the reel is fitted on the one side with a flange to which is connected a removable universal joint-equipped drive shaft. The other side is fitted with a small brake drum, the brake handle of which may be held down to produce any desired tension by means of an iron weight.

The ends of the drive shaft are equipped with couplings that are easily slipped on or off the spool shaft or power source. Each coupling is provided with a hole through which a steel pin may be dropped, locking the two connecting couplings together. A cathead-equipped truck spotted beside the spool is the usual source of power, and it is just as convenient to spool a line in the field as in the supply yard. The brake drum with the adjustable-weight braking feature, provides a steady, even drag on the reel, thus assuring an evenly and neatly spooled line.



Above: Removable universal joint equipped drive shaft side of field spooling device.



Left: Brake drum side of field spooling device, which makes it possible to produce any desired tension by means of an iron weight.

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Accusations and Suggestions Fly In Study of Eastern Shortage; Further Restrictions Likely

»

Senate Report Tells of Inexcusable Delays in Eastern Barge Plans

»

Control of Materials Distribution To Oil Given PAW

»

By B. F. LINZ
Washington Correspondent

☆ ☆ ☆ ☆

FURTHER restrictions on fuel-oil consumption in the East, possibly involving the cutting off of supplies from theatres and other places of amusement already badly hit by a ban on pleasure driving, were in the making this week in a desperate effort of the administration to provide fuel for homes.

Although deliveries into the area are increasing, they are still far from meeting requirements and in many communities difficulties are being encountered in supplying consumers. In an effort to cope with this situation, PAW restricted resellers and industrial and commercial consumers to a ten-day supply limit, so that surplus stocks could be avoided.

A Senate committee investigating the Eastern oil situation was told that military authorities unnecessarily kept oil in tank cars, that the administration had blundered and was more interested in delivery of oil to other countries than its own people. The committee also heard many suggestions as to ways of increasing deliveries, included were shorter rail hauls from Midwest, concrete pipe lines, rubber lined box cars, and additional barges. It was warned that if the fuel oil situation becomes much more acute "military authorities may have to take over all control and distribution."

In one of the most scorching of a series of reports which it has issued on the progress of the war program, the Senate committee investigating defense charged that there had been "inexcusable" delay and confusion in carrying out the barge construction and conservation program, and declared that had there been less talk and more action some of the present difficulties might have been averted.

Meanwhile, the new authorities granted the PAW under the President's order were gradually being clarified through conferences between Ickes and Donald M. Nelson, and a general basis for operations of the oil agency has been developed.

Many Charges and Suggestions Made In Debates Over East Coast Muddle

"Intelligent cooperation" between the Navy and PAW to avoid tying up needed transportation facilities was urged by Mayor LaGuardia of New York January 12 at hearings before the Senate committee investigating the oil situation.

LaGuardia put his finger upon one of the primary causes of present East Coast difficulties—the unpredictable actions of the Navy, whose sudden withdrawal of very large quantities of products was largely responsible for the gas-sale "blackout" of December 18.

The mayor urged that the Army or Navy should not take over oil until it is ready to be loaded on ships, explaining that in many instances the oil is earmarked well ahead of time and is kept in tank cars on sidings waiting to be unloaded. He said the Navy knows to the day when a convoy will be in port for loading, and the moving of the oil should be synchronized with other loading operations.

Other suggestions by LaGuardia for improving the situation included the shortening of the rail haul by bringing more oil in from the Midwest during the next two months; the use of barges and tugs now in New York Harbor to haul oil to New England, releasing tank cars and increasing the supply for that area; and the reversing of the flow of the Philadelphia-Buffalo pipe line, which he said has a capacity of 18,000 barrels a day but is now being used to less than half capacity for moving products away from the coast.

Shorter Rail Hauls

The mayor's testimony was supplemented by Walter P. Hedden, transportation expert of the New York Port Authority, who said that only 9,000 to 10,000 of the 67,000 cars in the eastern service are operating from Midwest points. Those cars deliver an average of 15 barrels per car day, compared with only 10 barrels per car day for cars hauling from more distant points. If another 10,000 cars were diverted to the Midwest, he said, they could deliver an additional 50,000 barrels a day and, he claimed, as much as 9,000,000 barrels of oil could be taken from the Midwest in the next 60 days without depleting its stocks.

Administration Blunder

On the other side of the Capitol, Representative Fish of New York charged January 11 that the fuel shortages—oil and coal—were due to the "topsy-turvy national leadership."

Fish complained that people in his district "will suffer unnecessary hardships and have their health endangered because of the inefficiency and lack of foresight of the administration in not constructing one or more pipe lines a year ago from the oil states to New York and New England."

The oil situation, he said, is "one of the major blunders of the Administration."

He urged the House Interstate and Foreign Commerce Committee to give prompt consideration to his bill authorizing the construction of one or more pipe lines from the producing area to the coast. "Let us be sure of enough oil to keep warm next fall and enough gasoline to run our cars on the synthetic rubber promised by then," he said.

Fish referred to a statement by Maritime Commission Chairman Emory S. Land before the Maloney Committee that the order in which tankers are used for the delivery of oil is: The armed services, Great Britain, South American republics, Central American republics, Canada, and essential domestic needs.

"If this is the policy of the Administration," he declared, "then it is shocking proof of the indifference of the New Deal Administration to the needs of our own people. Why should priorities be given the whole world before the requirements of our population are supplied?"

Too Many Agencies

Members of the New England delegations met for a discussion of the situation January 13, and Senator Maloney, chairman of the Senate investigating committee, urged that all control of gasoline and fuel oil be placed in one agency.

Maloney complained that with control split up between PAW, ODT and OPA it is difficult to determine who is responsible for unsatisfactory situations.

"I have come to the conclusion that there should be one over-all head for this entire program, because it is pretty hard to place responsibility otherwise," he said.

The Senator reviewed the efforts that have been met to improve the situation, but held out little hope for any great increase in supply, and warned that some observers believe that next winter will be even worse.

Representative Curley of Massachusetts revived the idea of concrete pipe

lines, urging the construction of one from Chicago to New York which he said could be built in 45 to 60 days if "500,000 to 1,000,000" men were put to work on it.

Military Control Predicted

Senator Walsh of Massachusetts, who called the conference, disclosed that if the fuel oil situation becomes sufficiently acute "the military authorities may have to take over all control and distribution, at least along the Atlantic Seaboard."

Walsh explained that this would not mean that the needs of civilians would not be met as far as possible but would indicate that it is important for military demand to be met first.

As chairman of the Senate Naval Affairs Committee, he said, he has surveyed the Navy fuel situation with department officials and has urged that they increase the amount of oil which may be released for civilian use, but saw little hope because "there is almost as serious a situation regarding the fuel needs for military purposes as that which the civilian population is experiencing."

Demand for military purposes is certain to increase steadily, he warned.

To provide for as equitable distribution of short supplies as possible, PAW issued an order restricting inventories of resellers and industrial and commercial consumers to not more than 10-days' supplies, effective throughout the 17 Eastern States.

At a press conference January 14, Ickes took issue with Senator Walsh's prediction of possible military control, declaring there is "not the slightest justification for such apprehension." The trouble, he pointed out, is lack of supply and not the uses made of supply and, he added, "even the military are perfectly satisfied" with present methods.

The administrator also discussed other matters brought up at the New England meeting, and said that a suggestion of Mayor Tobin of Boston for a general cut of 10 percent in consumption throughout the country would not bring in "enough additional tank cars to wet a sponge."

Concrete Pipe Lines

He said that PAW is far ahead of Mayor LaGuardia of New York, who urged that more oil be brought in from the West, and has long been engaged in expanding deliveries from that area. However, he added, a concrete pipe line, suggested by Representative Curley of Boston, is not feasible, explaining that PAW has thoroughly studied the subject of concrete lines, the main objections to which are that almost as much steel is required as for a metal pipe line for reinforcement of the concrete and the heavy losses by leakage.

"We have investigated from A to Z the question of feasibility of concrete pipe lines, and we just don't see it," he said.

Since the recent conference of railroad heads with Stabilization Director Byrnes, Henderson and himself, the roads and the industry have done much to speed up deliveries by cutting turn-around time, but the time can be cut still further, Ickes said.

"Some oil companies are doing much better than others in both turn-around and in keeping their cars in repair," he commented.

Rail deliveries to the East, increasing steadily over a two-week period, averaged 822,837 barrels daily during the week ended January 9, a gain of 47,420 barrels over the preceding week, he disclosed.

Discussing the effects of the ban on pleasure driving, the administrator said the situation in the East "is a little easier, but I am still keeping my fingers crossed, am touching wood and carry a buck-eye with me."

The ban, he said, should have been imposed long ago, recalling that he went before WPB in August and insisted they cut consumption by 139,000 barrels daily. That, he said, refuted a statement by an OPA official testifying before a Congressional committee that only one day's notice of the ban had been given by the administrator.

At the present time, he said, savings are running around 80,000 barrels daily, including 15,000 to 20,000 barrels from undriven pleasure riding.

At the urgent request of Governor Saltonstall of Massachusetts, who asked that Ickes go up for a conference, Deputy Administrator Davies and Assistant Robert Allen went to Boston to discuss the situation although, Ickes said, there was nothing he could do to bring in any more oil.

A report by the New England delegation on the results of its investigation made no recommendations for improving the situation. But it was urged that the public be honestly informed "that even under the most favorable circumstances there will be a drastic shortage" of petroleum products this winter.

The principal causes contributing to the shortage, the report found were the lack until December 2, last, of an agency with power and authority to compel the delivery of oil to areas like New England where it was apparent a famine was developing. The failure to build the pipe lines authorized by Congress in July, 1941; and the slowness and "unjustifiable delays" in making decisions and carrying out directive of OPC, ODT, OPA and WPB.

Nation wide rationing should have been imposed much earlier than it actually was, the delegation held. When adopted December 1, last, it was too late to ease the situation in the northeastern states.

Box Car Experiments

Commenting on the general situation, Ickes said that experiments in rubber tanks for the carriage of oil in box cars are going ahead rapidly with "some degree" of satisfaction; the application for a second Texas-East Coast pipe line is being pressed, and indications are that the number of wells drilled during the coming year will approximate that of 1942.

In a coast-to-coast radio discussion of the situation with Senator Ralph O. Brewster of Maine January 13. However, Ickes held out no hope of quick improvement of present conditions.

"We can say tonight that we're holding the line against the oil-shortage problem. That there is no honest prospect of much easing of the restrictions that have already been imposed on the consumption of gasoline and fuel oil, that continued increases in military requirements for petroleum may require even a further tightening of our belts, and that the long-pull efforts to relieve the oil shortage cannot materially alter the critical oil situation before midsummer," he declared.

"These are the facts that outline our petroleum prospects for 1943. But I want to emphasize a further fact. The oil situation at any given moment is the result of hundreds of factors and conditions, most of them unpredictable. Like death and taxes, the only certainty in the problem of the organization of our petroleum resources for war is uncertainty. And this uncertainty is aggravated by the fact that we must take action and make decisions at a time when urgency keeps pushing every move, and sudden change is the order of the day."

Unnecessary and Inexcusable Delays in Barge Program Says Senate Committee

Charging "inexcusable" delay in the prosecution of the barge-construction program designed to relieve the East Coast situation, the special Senate committee investigating the national defense program declared January 14 that had flimsy-based objections of the Navy and Maritime Commission been rejected much of the difficulties now being encountered might have been avoided.

To insure against a repetition of the situation, the committee recommended that the program be prosecuted with vigor, pointing out that the barge projects and the pipe lines sponsored by PAW will increase deliveries to the East Coast by 431,000 barrels a day.

In a special report on the barge situation, the committee explained that a group appointed by President Roosevelt, composed of Administrators Ickes and Henderson, Secretary Jones, Director Eastman and Major General Reybold, drafted a program for conversion of bulk-cargo steel barges and the construction of 500 wooden barges, 100 wooden-hull tugboats and 20 steel-hull towboats, which was approved by the President last July and which the War Department reported could be completed, if priorities were granted, by April 1, next.

In August, the committee said, the program for the conversion of steel barges was halved from 259 to 130, and the remainder of the program was ordered held in abeyance.

"This action was taken because of the shortage of steel and on the report of the bureau of ships of the Navy Department that the most likely source of diesel engines was General Motors Corporation, all of the facilities of which would be required until the middle of

April, 1943, for essential Navy programs," it was explained. "The diesel-engine section of the War Production Board was not even consulted concerning availability of smaller diesels."

Engines Available

In September, the report continued, Office of Defense Transportation represented to Defense Plant Corporation that steam engines and 250-horsepower diesel engines could be made available, and the two agencies joined in urging that WPB reconsider the towboat program. WPB, however, concluded in October that the program should be resubmitted next spring "on the theory that so much time had been lost that towboats could not be completed until February or March of 1943, when it would be too late to have any effect on the oil shortage during the winter of 1942 and 1943."

However, in November, re-examination of the matter was authorized by Nelson when it was suggested that the Chrysler gasoline engine known as the "sea mule" might be used as a substitute for diesels. That engine is now undergoing tests which will not be completed for some weeks, it was said, but the diesel-engine section of the WPB "finally" was consulted and reported that while heavy diesel engines would not be available, there was no question of the availability of steam engines and boilers and small diesels, a report which resulted in the resubmission of the program.

At that time, ODT asserted that every available tank barge was in service and the conversion program was not being held up by lack of motive power but rather by the failure to convert existing steel barges, and sufficient tug and towboats could be made available by transfers from nonessential uses and of boats which could not be used in their normal occupations during the winter months.

Conversions Lag

Up to December 31, 1942, the committee found, contracts had been let for the conversion of only 84 barges with a total capacity of 1,005,000 barrels, but only 4, with a capacity of 15,000 barrels, had actually been converted, the explanation for the lack of progress given by ODT being that "the conversion program was being held up by financial and other restrictions imposed by Defense Plant Corporation, which made it difficult to use available shipyard capacity."

In November, WPB Chairman Donald M. Nelson asked Jones either to modify the restrictions or proceed by letters of intent and asked Eastman to take drastic steps to increase barge deliveries. Nelson also asked Ferdinand Eberstadt, chairman of the WPB requirements committee, to take the barge program personally in hand.

A revised program substituting motive power which had been found to be available was taken under consideration but Navy and Maritime Commission representatives suggested that even the shortened program might interfere with their programs.

"At a later meeting," the committee disclosed, "it developed that the Navy's opposition was on the theory that the barge program might conflict with its requirements for lumber and that the Maritime Commission's opposition was based on the theory that steel was more urgently needed for tankers and ore carriers." Investigation revealed there was plenty of lumber and that while steel was tight it was not sufficiently critical to require the abandonment of a program as essential as the barge program. Eberstadt thereupon granted the program an AA-3 priority rating, and thereafter the program began to move and it is now estimated that it can be completed in its entirety by next summer.

Delay "Inexcusable"

"The committee believes that there has been unnecessary delay and confusion in carrying out a program essential to the national welfare," it was declared in summing up the report. "The delay which occurred prior to the recommendations of the committee appointed by the President is most regrettable, but the delay which occurred after the matter had been studied by that committee and after its recommendations had been approved by the President is inexcusable.

"The lengthy and frequent conferences which took place between the numerous agencies involved produced many arguments but few decisions.

"The program recommended by the President's committee and approved by the President ought not to have been discarded on the Navy's suggestion that high-powered diesels necessary for motive power could not be obtained without exploring whether existing tugboat and towboat power could be made available by a transfer from other uses and without exploring whether steam engines, gas engines, or smaller diesel engines could be made available.

"The following committee and agencies all had a hand in making decisions with respect to barges: The President's Committee to Investigate the Problem of Supplying Additional Means of Transportation to Satisfy Petroleum Requirements of the Eastern Seaboard, and a technical subcommittee thereof; Defense Plant Corporation; Army Engineer Corps; Requirements Committee, WPB; Program Adjustment Committee, WPB; Diesel Engine-Section, WPB; Office of Procurement and Materiel, Navy Department; Bureau of Ships, Navy Department; Maritime Commission, and the Inland Waterways Corporation, Department of Commerce. The confusion resulting from this overlapping of authority and duplication of effort is revealed in the discussion of facts. There was simply too much talk and not enough action.

"Valuable time has been lost. If the barge program had been carried out expeditiously, the shortages of both fuel oil and gasoline in District 1, particularly the southern and western portions thereof, would have been much less severe. The committee recommends that no further delays be permitted to occur in this vital program."

PAW Gets Control Over Distribution Of Materials to Petroleum

The Petroleum Administration for War has been designated as one of the "claimant agencies" having first call on the materials stock piles of the country.

Originally, these agencies were the Army, Navy, Air Forces, Maritime Commission, Office of Civilian Supply, Lend-Lease and Board of Economic Warfare, but the list has been expanded by a half-dozen more, including PAW, National Housing Agency, Office of Rubber Director, Office of Defense Transportation, Food Administrator and the WPB facilities bureau.

The claimant agencies act as spokesmen for various activities using critical materials, responsible for making up and presenting programs and compiling requirements of materials to meet them.

Under this plan, PAW will draw up drilling and other programs requiring materials, the amount of which needed to make the programs effective it will estimate and submit, thereafter being responsible for seeing that the program, as approved, is carried out.

In programming the distribution of steel and other materials, WPB considers the claims of the various agencies and allocates specific quantities to each, the extent to which their demands are met depending upon the relation of the total claims to the available supply.

The designation gives PAW the control over the distribution of materials which it has long contended it should have for the efficient application of the various programs it has adopted from time to time.

Price Increase Held Essential for Independents

Only an increase of price will give to wildcatting the impetus needed to bring in the new oil which must be provided, according to W. W. Lechner, Dallas, Texas, oil producer and drilling contractor.

Declaring that a subsidy will not achieve the aim of the Administration to increase our oil reserves, Lechner, in a letter to Representative Wright Patman predicted that unless the price situation improves, "the bankers are going to be unable to carry the loans they are called upon to make to the small or independent operator, the only thing being left for him to do is foreclose, thereby entering into a business about which he knows practically nothing, or turn the recovered property over to some major company at a discount."

"East Texas production problems and costs are already on the increase; this field is taking the inevitable path of all other fields as salt water encroaches and cuts production," he said. "This field has been an abnormal field from the

start and cannot be used as a yardstick. Already an expenditure of $2,000,000 has been made to prevent premature abandonment because of salt water encroachment. Four thousand of these wells have been placed on pump in order to get the oil lifted, and from here out it will be almost a continuous proposition of wells going on the pump (if pumping equipment can be obtained, due to priorities, etc.), and increasing cost of handling the salt water and injecting it back into the sands. With the installation of pumping equipment and its cost, and vast increase in labor costs, the decline in revenue will be more appreciable than heretofore."

O'Mahoney Wants RFC To Finance Wildcats

Senator Joseph C. O'Mahoney of Wyoming last week urged Reconstruction Finance Corporation to give immediate consideration to recommendations of the Public Lands Subcommittee of which he is chairman, for government financing of exploration and wildcatting.

In letters to Secretary Jones, Director Nelson and Administrator Ickes, O'Mahoney declared "I feel that it is essential for OPC, WPB and RFC to begin immediately carrying out these recommendations."

PIWC Resolution Seeks Fuel-Oil-Price Increase

Adoption at the January meeting of PIWC of a resolution calling for an increase of 16 cents per barrel for residual oil with a gravity of 10° and below (No. 6 fuel oil), and the use of a formula for increasing the prices of lighter oils on a gravity scale, was disclosed January 13 by Chairman William R. Boyd, Jr.

The higher prices would apply to the entire United States except the Pacific Coast, where increases already have been allowed, and the resolution, Boyd explained, was designed to relieve a critical shortage of heavy fuel oils which is developing, particularly in the Middle West, by providing increased production from small refineries not making war products. These refineries, he said, are unable to change their output to make more fuel oil unless they obtain a higher price, because in so doing they automatically make less of the higher-priced products on which their solvency depends.

The chairman disclosed also that John D. Gill, chairman of the committee on cost and price adjustment, reported that the group is engaged in an exhaustive study of crude, including estimated demand and supply for the foreseeable future, the increase in production that will be necessary to meet the demand, the cost of exploration and development to obtain new reserves to make increased production possible, costs of production in present fields throughout the country, the incentives in increased prices or other means that may be necessary to increase reserves and meet production costs, and the effects of any such price increases on the costs and prices of products, and will report its findings next month.

O. D. Donnell, chairman of the committee on production, reported the appointment of a subcommittee on substitutions and operating practices which will study the possibility of reducing the amount of steel in oil-well pumping units, the elimination of some casing strings used in drilling wells, and the practicability of the use of fiber pipe. Ivan Salnikov, Carter Oil Company, Tulsa, is chairman of the group, other members of which are Roscoe Ayers, Bethlehem Supply Company; C. W. Olesen, Stanolind Oil & Gas Company, and H. E. Shaefer, The Pure Oil Company, all of Tulsa.

Boyd reported that conferences with representatives of the Bureau of Employment Security, and PAW had resulted in an agreement on modification of the Bureau of Employment Security requirements for county reporting of oil industry employment records. The new regulations, covered in BES Research and Statistics Letter No. 18, provide in general for reporting on a company divisional basis, with one-time or sample county breakdowns asked for in some cases.

Ickes and Nelson Clarify Division of Authority Between PAW and WPB

The War Production Board on January 13 released the substance of a letter outlining the division of responsibility between WPB and PAW in connection with actions affecting the oil industry.

Designed to clarify the situation arising out of the issuance of the President's executive order creating PAW, the letter, embodying the "mutual understanding" of Nelson and Ickes regarding the division of authority, provided for the following relationship:

"1. Under Executive Order 9276, the administrator will issue directives and orders to the petroleum industry relating to the production, refining, treating, storage, shipment, receipt and distribution within the industry of petroleum products or associated hydrocarbons as defined in the order. To avoid confusion with WPB actions, the administrator's actions will be designated 'petroleum directives' or 'petroleum administrative orders.'

"2. The administrator also may take action, to the extent specified in the order, concerning the distribution within the industry of other products or material, including the granting or denial of priority, allocation or preference-rating assistance to the industry. Such actions will be subject to program determinations and other directions of the WPB chairman and will be issued in the name of WPB's Director General for Operations. The administrator's signature will appear on such documents so that the industry will be able to distinguish between actions originating in WPB and those originating with PAW.

"3. The administrator will give WPB reasonable advance notice and opportunity for consultation before taking any of the actions outlined above, excepting in case of an emergency, by mutual agreement with certain WPB officers, or in cases where the proposed action will not affect more than two members of the industry, provided the members do not represent the majority of the particular branch of the industry affected.

"4. WPB will continue to give the Office of Petroleum Coordinator for War reasonable notice and opportunity to be heard concerning all actions which might affect the petroleum industry, subject to the same exceptions as those set forth above.

"5. The administrator will give WPB five days' notice before taking action affecting products or hydrocarbons not deemed to come within the definition of petroleum products and associated hydrocarbons contained in the Executive Order.

"6. The administrator will provide the means for enforcing all 'petroleum directives' or 'petroleum administrative orders.'

"7. As soon as possible, WPB orders which come within the provisions of paragraph 1 above will be reissued by the administrator, and the WPB orders will be revoked. This includes L-70, regulating shipments of motor fuel, and all orders in the M-68 series, which deal with petroleum production and marketing material and conservation of petroleum material.

"Procedures for giving the notices referred to in paragraphs 3, 4 and 5 above will be worked out between PAW and the Deputy Director General for Distribution of WPB. Additional procedures for the presentation of the petroleum industry's requirements to WPB are still under discussion, and will be determined as soon as possible.

Kerosine Moving East in Drums

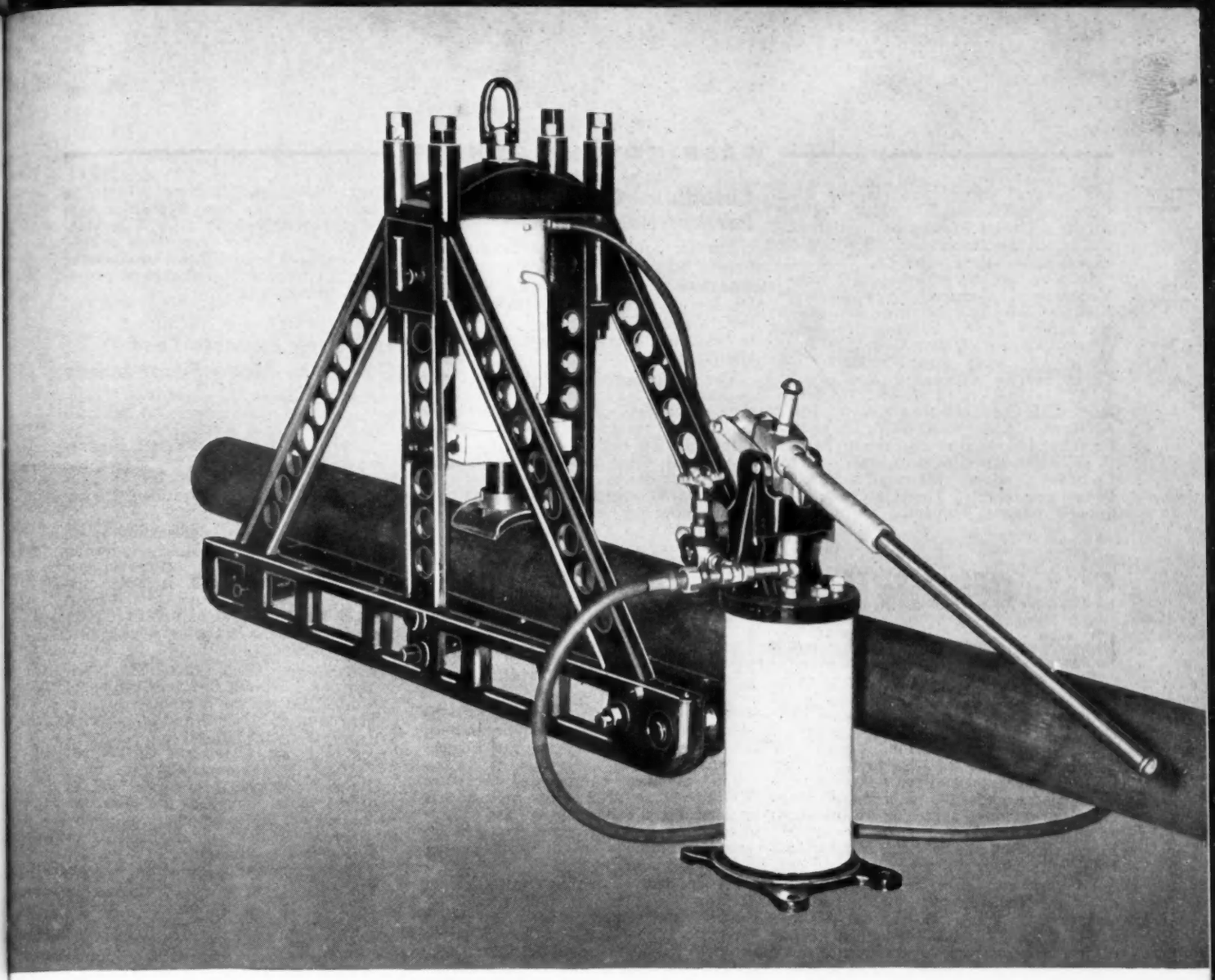
New England's acute kerosine shortage is being relieved by shipments of between 165,000 and 330,000 gallons daily in drums moving in box cars, Deputy Administrator Davies reported during the week to Representative McCormack of Massachusetts.

The movement is being made possible by an agreement of the Defense Supplies Corporation, at the recommendation of PAW, to absorb the extra costs of moving kerosine in this way, beginning January 12.

Davies explained that the Army has made approximately 200,000 steel drums available and it is planned to establish a daily movement of 6500 barrels.

He estimated that the cost of drum transportation amounts to as much as 15 cents a gallon, and pointed out that even before Defense Supplies Corporation made it known that it would absorb the extra costs the oil companies were moving kerosine, adding that "for this wartime cooperation, the oil companies are to be highly commended."

Simultaneously, PIWC disclosed that a committee is studying the possible



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use of steel drums to help the East Coast situation and is making a quick survey of drum loading and rail facilities in the Southwest and Middle West to determine their capacity.

John A. Brown, president of Socony-Vacuum Oil Company, New York, is chairman of the committee, on which are serving J. W. Carnes, vice president of Sinclair Refining Company, New York; W. Alton Jones, president of Cities Service Company, New York; B. L. Majewski, vice president of Deep Rock Oil Corporation, Chicago; John A. Newton, vice president of Magnolia Petroleum Company, Beaumont, Texas; E. G. Seubert, president of Standard Oil Company (Indiana), Chicago, and H. C. Wiess, president of Humble Oil & Refining Company, Houston.

Butadiene Distribution Further Restricted

Further limitations upon the distribution of butadiene, styrene and acrylonitrile have been imposed by the War Production Board in an order restricting the amounts which may be delivered to customers over and above their quota allotments.

The order provides that a producer each month may deliver on small orders one fourth of one percent of the amount of material he is specifically authorized to deliver under allocation restrictions. Small orders are defined as 125 pounds or less in the case of butadiene and 50 pounds or less in the case of the other two materials.

State Officials Urge More Public Land, Unitization and Secondary Operations

Immediate development of Naval Reserve resources, liberalization of regulations governing operations on public lands, and passage of state laws requiring unit operation and secondary recovery projects where the majority of owners desire, were urged in resolutions adopted by the National Conference of Petroleum Regulatory Authorities with PAW officials January 12.

To carry out President Roosevelt's call last November 10 for immediate discovery of additional sources of oil, and to further the development of present proven reserves, the conference laid down a five-point program.

"We urge all federal authorities, without delay, to do everything possible to prevent the immediate shortage of petroleum and its products," it was stated in the resolution.

"Of paramount importance is an increase in the productive capacity of the oil fields of the United States. An increase in the price of crude, in our opinion, is the practical and proven way to bring this about.

"There are four Naval Petroleum Reserves: Elk Hills, Buena Vista Hills, Teapot and Northern Alaska, which are not being adequately developed at this time. We strongly urge and recommend that the Navy Department proceed immediately to develop and produce these reserves for use in the present national emergency.

"We urge the Secretary of the Interior to adopt liberal regulations to carry out the purpose of Congress to encourage the development of oil and gas on the public domain, as stated in the O'Mahoney bill; and to that end to declare in advance the royalties that will be exacted, and to provide that the term 'new deposits' shall mean all accumulations of oil within the boundaries of a lease not known to exist or definitely proven. We also urge that all departmental regulations limiting the consideration obtained by government lessees who procure development be suspended during the emergency.

"We urge that the oil-producing states pass laws requiring unit operation and secondary recovery operations of oil and gas fields, upon petition of a substantial majority of the owners thereof."

The meeting commended Senators O'Mahoney and Hatch for their efforts in securing the passage of the O'Mahoney Act, and expressed gratification over the appointment of Ickes as petroleum administrator .

Present at the conference were: Hiram M. Dow, New Mexico, chairman; Ralph Essary, Indiana; Paul H. Price, West Virginia; John M. Kelly, New Mexico; Samuel F. Peterson, Illinois; O. C. Bailey, Arkansas; A. B. Middleton, Montana; Walker T. Pound, Oklahoma; Joseph L. McHugh, Louisiana; Warwick M. Downing, Colorado; Warren D. Skelton, Wyoming; Reed D. Bush, California; Alfred Williams, Kansas; Parker L. Melvin, Pennsylvania, and N. W. Shiarella, Kentucky.

Some Progress Reported On Rubber Plant Priorities

A serious threat to the administration's synthetic rubber program, created by a controversy over the granting of priorities for plants, appears well on its way to being cleared up, but doubts remain whether the full production originally contemplated will be possible in anywhere near the scheduled period.

So far, it is said, Director William M. Jeffers has obtained top-priority ratings for completion of only 20 percent of the program which was designed to lift rubber stocks out of the "valley of death" which he said they would reach next fall at 120,000 tons.

Demanding that additional priorities be granted so that the program, already at least one month behind schedule, might be carried out. Jeffers is said now to be on the way to obtaining priorities which will complete 55 to 60 percent of the plant capacity.

Difficulties in securing priorities have been due to the fact that the rubber program is competitive with the aviation-gasoline program, as well as with other primary phases of the whole war effort. WPB officials were said to be committed to the Navy's position that it was imperative that gasoline production be provided for even ahead of rubber, and have been difficult to convince that the two programs should be prosecuted simultaneously.

Treasury Expects Less Gas Tax, More From Lubes

A sharp downward revision of Treasury estimates of revenue to be expected from goods and services affected by production restrictions and rationing orders was disclosed in the budget for the fiscal year to begin next July 1, submitted to Congress by President Roosevelt January 11.

As an example of the scaling-down, the yield from the gasoline tax during the current fiscal year, estimated last January at $385,400,000, is now estimated at $256,100,000 and for the fiscal year 1944 is placed at only $219,300,000. Actual collections in the fiscal year 1942 were $369,587,151.

The revenue from the tax on lubricating oils, however, last year estimated at $45,000,000 for the current year, now is figured at $57,800,000 and is expected to increase to $58,000,000 in 1944, compared with actual receipts in 1942 of $46,432,268. It was explained that while the automotive use of lubricating oils is expected to be curtailed, the effect on revenues will be more than offset by the increase in the tax rate from 4.5 to 6 cents a gallon under the 1942 tax act and by an increase in industrial use.

The estimate on revenue from the tax on pipe-line transportation this year was only slightly reduced, from $14,200,000 to $14,100,000, and is placed at $16,700,000 for 1944, compared with an actual of $13,474,822 in 1942.

The $108,000,000,000 budget calls for a flat $100,000,000,000 for prosecution of the war, but no details of how the money is to be spent were given, partly to avoid giving information to the enemy and partly because possible material changes in war conditions make it desirable to withhold definite commitments. For the latter reason, no detailed estimates were submitted for the Petroleum Administration for War, Office of Price Administration, and Office for Emergency Management (WPB, etc.), but will be sent to Congress in the spring.

In one of the tightest departmental budgets submitted, Secretary Ickes slashed appropriations for the Interior Department wherever possible, cutting his total $19,000,000 under current funds.

Among the changes made were a reduction from $257,030 to $241,600 in the fund for the petroleum conservation division; an increase from $339,750 to $341,000 for the Geological Survey's enforcement of the mineral leasing act; and reduction from $368,100 to $335,000 in the Bureau of Mines' fund for oil and gas investigations and from $55,330 to $50,000 for its work on the hydrogenation of coal; the Bureau of Mines appropriation of $43,000 for synthesis of motor fuels was continued unchanged.

J. D. GOODRICH, engineer for Shell Oil Company, has been transferred from Houston to Lake Charles, Louisiana.

Texas Crude Demand Expected to Be 25,000 Barrels Higher in February

An increase of 25,200 barrels daily in the demand for Texas oil during February was announced by the Texas Railroad Commission at its monthly hearing held in Dallas, January 15. The Petroleum Administrator for War has set 1,452,000 barrels as the figure recommended, Commission Chairman Beauford Jester said. Purchasers filed nominations to buy 1,621,374 barrels daily, an increase of 26,826 barrels. This demand is for crude oil and does not include about 114,000 barrels of unprorated distillate, condensate and other liquids. The figure from Washington includes production of all oils.

Members of the commission indicated that the full federal increase would be allocated, but that this figure would not be exceeded. This means production of about 1,338,000 barrels of prorated crude oil during February.

Reports from operators indicated that facilities for handling more oil would be available this spring. The big-inch pipe line from East Texas should be operating at 300,000 barrels daily by April 1, according to J. A. Neath of Humble Pipe Line Company. The new Sinclair Refining Company line from Corpus Christi to Houston should be operating at capacity of 22,000 barrels daily by the middle of February. Plans are proceeding to convert another line from Corpus Christi to Houston, the United Gas line. If there is no delay, it should be moving oil within two or three months, it was revealed.

This was the first statewide proration hearing that the commission has held away from Austin and an unusually large number of operators attended. It seemed certain that the commission would proceed with its plan to hold the next meeting in February in Fort Worth, and the March hearing at Houston.

Few requests were made of the commission, and these involved relatively small amounts of oil. Humble Oil & Refining Company reported that it is still getting too much oil from West Texas, and too much Mirando and Refugio light crude from Southwest Texas. Sinclair Refining Company renewed its request for more oil from North Texas, and Phillips Petroleum Company asked for a small increase in the Panhandle. Increases for Anahuac and Hastings were requested also.

Liberalized Discovery Allowables

Commissioner Olin Culberson presented a plan to liberalize allowables granted to newly discovered fields. He pointed out that the order now provides that the extra allowance terminates when there are more than five wells in the field. This results in failure to develop the field until the bonus period has expired, and tends to cluster the wells around the discovery.

His new plan is designed to designate each new well located more than half a mile from the discovery as a new field, give it the full benefit of the bonus regardless of the number of wells which may be drilled elsewhere. He sees the order as a means of encouraging full definition of a field as soon as it is discovered.

"This amended order," the new plan read, "shall apply to all wells in each new fields discovered after the effective date hereof as follows: Each well drilled in such new field shall receive the new-field allowable for a period of 18 months after the first oil is marketed from each such well, or until there shall have been completed in such field six producing wells, each of which is at a location less than one half mile from any other producing well or wells." It was taken under advisement.

An order designed to enable all East Texas operators equal opportunity to obtain premium oil for salt water injection, was issued for each 50 barrels of salt water injected from a well. The commission formerly allowed the production of 1 barrel of oil more from some other lease as a means of defraying the cost. As much as 6 barrels credit could be obtained for one well if 300 barrels or more of water produced from it was injected.

When the salt-water disposal company was approved, it was given permission to produce this premium oil from any lease in the field where arrangement could be made. No provisions were made to extend this privilege to others but the order entered by the commission last Friday permits any individual or group to take full advantage of this procedure. By this method the commission hopes to encourage further salt-water injection in the field by the smaller operators.

The commission reported a drop of 1.41 pounds in the East Texas pressure during December, which is 2 ounces per million barrels of oil produced, and left an average pressure of 1015.7[1] pounds on January 1, 1943. Culberson reported empty storage in Texas now totals 118,-724,000 barrels, of which 53,557,000 barrels is at refineries and the balance at tank farms and pipe-line terminals. This report has been furnished each month recently. J. A. Neath said these figures do not reflect the facts, although they are taken from sworn reports furnished the commission. He explained that the data must be interpreted correctly, and furnished a report which purported to do so. He explained that 40 to 60 percent of the storage space must be empty in order to furnish working room under certain conditions.

The hearing was not closed but was recessed to January 18, at Austin. Then the commission will hear special evidence on the Bammel field, and from one other operator who has asked for more time.

Advance of Fifty Cents Per Barrel in California Crude Immediate Necessity

Ceiling prices for crude oils in California must be advanced by at least 50 cents a barrel if the state is to continue to meet present wartime demands and anticipated needs over the first half of 1943, Reese H. Taylor, president of Union Oil Company of California, said January 13 in discussing changed conditions in the California oil industry brought about by the first year of war.

The higher price ceiling is an immediate necessity, but must also be accompanied by the promised relaxation of present restrictive controls on drilling and development so the industry may effectively employ its available equipment and remaining experienced manpower in field operations, Taylor said.

Taylor said he had forwarded to the Petroleum Administrator for War early this month a recommendation calling for an upward revision in crude-oil ceiling prices under a formula which would increase the ceiling price of 27-gravity Signal Hill crude 37 cents a barrel to $1.52 a barrel, and which would call for a maximum increase of 50 cents a barrel for 15-gravity Mount Poso field crude to $1.23 a barrel. Proportionate ceiling price changes would apply under the formula to other fields and other gravities, depending on the character of the crude. That is to say like gravities in different fields might not necessarily be increased in the same amount, as the increase would be greater to those crudes from which the largest percentage of desired products are obtainable.

The largest increase would apply to heavy crudes, which would tend to stimulate production of those crudes from which the highest percentage of fuel, diesel oil and gas oil are obtainable and for which the war has created abnormal demand.

Adjust Refinery Prices

An increase of 50 cents a barrel in the heavy-crude price ceiling, with recognition of recent increases in refining and marketing expenses, would necessitate increasing the base refinery ceiling price of fuel oils, gas oils and asphalts (product categories in which greatest shortages have appeared) by approximately 68 cents a barrel with relative increases in the ceiling prices of all crude oils proportional to the quantity of such products obtainable from various grades of crude petroleum. Motor-fuel prices would not be disturbed.

Paramount objective of price ceiling revisions and adjustment of governmental controls is the stimulation of critically needed new production, whether from old oil fields, interior development of known flush fields, or through exploration in wildcat territory, Taylor emphasized. The present situation in the oil industry is in no wise different from problems of supply facing other industries, such as the dairy, meat-packing and poultry industries, where dislocation of price ceilings has created critical shortages in many areas which could only be remedied by appropriate price adjustments.

Potential demand for California petroleum, especially heavy crudes, has

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increased to a point where current requirements are causing heavy inventory liquidation. Surface stocks can hardly be expected to cover the deficiency in production beyond some intermediate date in 1943. Naturally the extent of the future demand is uncertain, being based on war developments, but it would be dangerous to rely on a lessening of this demand. The increasing demand for California production is expected to reach 900,000 to 950,000 barrels daily during the first half of 1943. Present production of crude oil, natural gasoline and distillates is approximately 815,000 barrels per day, contrasted with 671,000 barrels daily a year ago and with 650,000 barrels daily two years ago.

Attention has been directed heretofore to the growing manpower shortage in the California petroleum industry, especially in the categories of workmen in skilled job classifications in the oil fields where years of training and actual experience are necessary to the conduct of efficient operations. West Coast war industries, such as shipbuilding and aircraft, and the armed services have absorbed such skilled workmen in large numbers. The migration of workers to war industries has been especially heavy during the past year due in part to the enforced reduction in field activities resulting from wartime restrictions on the use of critical materials in such operations.

Materials and Men

Recognizing the "pressing" nature of both the manpower problem developing in the fields, and the necessity to make available to the industry in California the quantity of materials needed to continue drilling operations at a higher rate than in 1942, spokesmen for the Office of the Petroleum Administrator for War stated recently that special consideration is to be given to the needs of California. Suggestions have been advanced for the allocation of such materials to:

1. Rehabilitation of existing wells (most of which would require the higher ceiling price to make such activities possible).
2. Drilling additional wells in proved or semi-proved areas.
3. Exploration work for development of new reserves.

Taylor pointed out it would be impossible to adjust prices to suit the individual situation of everyone in the California industry, and that it could not be expected a recommendation could be found which would receive the unanimous support of all within the industry. "I believe that the crude-price-ceiling formula suggested, however, would result in the production of most, if not all, of the oil that can be obtained from wells now considered unprofitable or marginal," he stated.

A higher ceiling price for crude oil must insure that there will be no incentive to any refiner to discontinue the purchase of a particular crude and substitute another, as it is essential that the amount realized by the industry from increased ceiling prices for products shall be reflected proportionately in the ceiling prices of all crudes from which such products are obtained, Taylor suggested. Only in this way can there be avoided a disturbance of the present flow of crude oil to the refiners.

For the past two years at least the California oil industry has been liquidating inventories and developed reserves. It has been meeting large increases in costs, although the cost factor has been offset in part by greater business volume. If its ability to meet the petroleum needs of the domestic economy and the armed forces is to be maintained at present high levels and the still higher levels indicated as necessary in the months immediately ahead, speedy action must be taken to adjust price ceilings; while at the same time attention should be given to the industry's materials and manpower problems immediately, Taylor concluded.

Station Installations Boost North Texas Line Movement

Stanolind Pipe Line Company has installed two pumping units at its Devol, Oklahoma, station, relay unit between K-M-A field and Healdton, Oklahoma, due to its runs from Wichita and Wilbarger counties, North Texas, having increased to 13,000 barrels daily. The company has added 1800 barrels daily in the K-M-A field, involving production controlled by Shell Oil Company through its acquisition of Fain-McGaha Oil Corporation, in exchange for an equal volume of Oklahoma City oil. Stanolind also receives 700 barrels daily of Fargo field oil from Bell Pipe Line Company.

Shell Refinery Is First To Win Army-Navy "E"

The first Army-Navy "E" to be won by an oil refinery was presented to the men and women of the Wood River refinery of the Shell Oil Company, Incorporated, at exercises January 15. Mrs. James H. Doolittle, wife of Major General "Jimmy" Doolittle, commanding American air forces in North Africa and who is on leave from Shell, was one of the speakers.

A telegram from Harold L. Ickes, petroleum administrator for war, congratulating the employes upon this "recognition of their high achievement in producing critical war materials" was read by Thomas N. Dysart, president of St. Louis Chamber of Commerce, who was master of ceremonies. Col. Merle H. Davis, chief of the St. Louis Ordnance District, in presenting the award commended the workers on their excellent record. Colonel Davis indicated that research and improved manufacturing methods developed at the refinery for the increased production of toluene, basic ingredient of TNT, 100 octane aviation gasoline, and a new improved marine turbine oil had contributed much to the winning of the award.

Alexander Fraser, president of Shell, reminded the employes that this year marks the silver anniversary of the founding of the Wood River refinery.

"Having started operations in the first World War," Fraser said, "Wood River has achieved the signal honor of being the first refinery in the second World War to receive the Army-Navy Production Award—a unique distinction for any company at any time in any industry."

SAM HULSE, Warren Petroleum Corporation, has been promoted to vice president in charge of sales. J. T. Oxley, chief of the gas measurement department, has advanced to an executive secretarial position.

Light and Heavy Fuel Oil Stocks Further Reduced

Continued serious difficulty in fulfilling requirements of light and heavy fuel oil was reflected in latest statistics of the industry, covering the week ended January 9. There were substantial withdrawals of both grades from storage, as crude runs to stills decreased.

For the whole United States 1,546,000 barrels of gas oil and distillate fuel oil came from storage, compared with a withdrawal of only 886,000 barrels the previous week. Having declined to 41,367,000 barrels, the stocks were almost 6,000,000 barrels (12 percent) lower than at the corresponding date a year before, although potential demand is materially higher now than then, with more oil burners installed.

Stocks of residual fuel oil were further reduced 322,000 barrels in the week ended January 9, following a withdrawal of 81,000 barrels the week before. The inventory of 72,559,000 barrels at the end of the week was 22,000,000 barrels (23.5 percent) smaller than that of 94,885,000 barrels on hand January 10 a year ago.

Finished and unfinished gasoline stocks were increased 1,825,000 barrels in the week ended January 9, in line with the usual trend for the season. Having risen to 84,245,000 barrels, they were nevertheless 12,765,000 barrels (13 percent) lower than the 97,010,000-barrel level recorded for January 10, 1942. This 13 percent decrease from a year ago is fully justified by the comparable decline that has occurred meanwhile in the consumption of gasoline.

These reactions of the stocks of the principal petroleum products occurred in response to crude runs to stills averaging 3,674,000 barrels daily, the runs having been 60,000 barrels a day lower than in the previous week. They were 217,000 barrels (5.5 percent) under the runs in the corresponding week a year ago, a decrease that was not far out of line with the decline that has occurred in the total demand for petroleum.

Stocks of crude oil were increased 711,000 barrels in the week ended January 2, latest period for which figures are available, from the Bureau of Mines. They rose to 233,938,000 barrels, but still were 10,502,000 barrels under the year-ago trend, a decrease of 4.2 percent. The crude stocks are only a few millions of barrels above the 20-year low of late 1939.

Production of crude oil averaged 3,821,000 barrels per day in the week of January 9, down 50,000 from the week before and 408,000 barrels (9.6 percent) under the level of the week of January 10, 1942.

Strong Markets Prevail; Fuel Oils Still Scarce

Markets continue generally tight, with supplies inadequate in various districts and transportation limitations still an impediment.

In the East Coast district fuel oils remained the principal matter of concern, with light fuels now in serious shortage, and with heavy fuels in very little better position.

In the Middle West, too, there continues serious difficulty in meeting the requirements of both light and heavy fuel oils, as refiners and marketers continue to ship materials to the East to help alleviate the shortage there. Transportation is far from adequate, and shipments are being delayed. Despite rationing of gasoline now in the Mid-West, there is no over-supply of that product, and demand for it is strong.

In the Mid-Continent there is continued strong demand for practically all petroleum products, the demand taxing both the available supplies and the available tank cars for shipping them out. There are complaints that shipments are being delayed from several days to

Crude Oil Production in the United States

(Estimates compiled by The Oil Weekly. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	*State Allowable of Crude Production	PRODUCTION IN WEEK ENDED Jan. 9	Jan. 16
Arkansas	74,826	74,900	75,150
California	771,000	771,000	773,500
Long Beach		35,000	34,150
Midway-Sunset		55,000	56,950
Kettleman Hills		42,500	43,300
Wilmington		95,300	94,950
Rest of State		543,200	544,150
Colorado		6,650	6,400
Illinois		252,850	235,100
Salem		31,750	30,600
Louden		42,800	40,350
Other New Pools		167,200	152,100
Old Pools		12,100	12,050
Indiana		15,850	17,600
Kansas	304,600	256,400	300,650
Kentucky		11,300	11,200
Louisiana	320,500	339,850	339,750
North		93,000	92,700
South		246,850	247,050
Michigan	58,430	59,400	56,800
Mississippi		63,350	58,650
Missouri		95	95
Montana		21,800	20,650
Nebraska		2,900	2,700
New Mexico	99,300	93,400	93,500
New York		15,700	15,600
Ohio		10,000	9,900
Oklahoma	370,600	349,800	347,400
Oklahoma City		62,400	58,800
Seminole Area		79,600	79,150
Rest of State		207,800	209,450
Pennsylvania		49,300	49,450
Tennessee		35	35
Texas	1,307,553	1,329,200	1,330,050
Upper Gulf Coast		308,750	308,850
East Texas Field		327,950	328,100
Rest of Eastern Texas		101,450	100,900
Lower Gulf Coast		99,050	100,200
Southwest Texas		48,850	48,900
South Central Texas		17,650	17,800
West Texas		200,450	200,300
North Texas		136,600	136,450
Panhandle		88,450	88,550
Utah		10	10
West Virginia		7,000	6,850
Wyoming		89,250	87,650
Total 8 Prorated States	3,306,809	3,274,000	3,316,800
Total United States		3,821,090	3,838,690

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

ITEM	Crude Oil Prod. Bbls. Day (Add 000)	Week Ended	Runs to Stills Bbls. Day (Add 000)	Week Ended	Crude Stocks Bbls. (Add 000)	Week Ended	Gasoline Stocks Bbls. (Add 000)	Week Ended	Gas Oil & Distillate Stocks Bbls. (Add 000)	Week Ended	Residual Fuel Oil Stocks Bbls. (Add 000)	Week Ended
Highs:												
1939	3,910	8- 5	3,650	10-21	278,607	5-26	87,769	4-22	39,562	10-28	116,237	8-26
1940	3,890	3-16	3,690	6-22	265,865	8-31	102,817	4-20	49,051	10-19	109,135	9-14
1941	4,337	11-22	[1]4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	[1]4,337	2- 7	3,961	1- 3	263,208	3-28	[1]107,229	3-14	49,861	11-14	95,857	1- 3
1943	3,871	1- 2	3,734	1- 2	233,938	1- 2	84,245	1- 9	42,913	1- 2	72,881	1- 2
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 8
1940	3,335	11-30	3,370	1- 6	237,339	1-27	79,847	11- 9	23,551	4- 6	102,344	2-10
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,381	4-12	90,914	7-12
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,674	1- 9	233,938	1- 2	82,420	1- 2	41,367	1- 9	72,559	1- 9
Trends in 1942 (Week Ended):												
Jan. 3	4,038	.....	3,961	.....	244,440	.....	92,987	.....	49,357	.....	95,857	.....
Jan. 31	3,871	.....	3,848	.....	250,740	.....	97,810	.....	40,674	.....	91,189	.....
Feb. 28	4,016	.....	3,675	.....	259,373	.....	105,635	.....	34,547	.....	88,285	.....
Mar. 28	3,820	.....	3,667	.....	263,208	.....	105,624	.....	31,756	.....	83,045	.....
April 25	3,581	.....	3,506	.....	257,073	.....	102,897	.....	29,240	.....	81,107	.....
May 30	3,877	.....	3,522	.....	255,023	.....	95,355	.....	31,384	.....	79,628	.....
June 27	3,719	.....	3,581	.....	253,364	.....	88,396	.....	32,851	.....	77,304	.....
July 25	3,691	.....	3,658	.....	249,262	.....	82,281	.....	35,966	.....	77,816	.....
August 29	3,964	.....	3,697	.....	249,007	.....	80,831	.....	42,060	.....	78,034	.....
September 26	3,909	.....	3,802	.....	242,785	.....	80,550	.....	45,945	.....	78,943	.....
October 31	3,901	.....	3,731	.....	239,266	.....	79,159	.....	48,131	.....	79,166	.....
November 28	3,878	.....	3,736	.....	234,850	.....	78,854	.....	49,739	.....	77,796	.....
January 2	3,871	.....	3,734	.....	233,938	.....	82,420	.....	42,913	.....	72,881	.....
January 9, 1943	**3,821**	.....	**3,674**	.....		.....	**84,245**	.....	**41,367**	.....	**72,559**	.....
January 10, 1942	4,229	.....	3,891	.....	[4]244,440	.....	97,010	.....	47,250	.....	94,885	.....
Change:												
In week	—50	.....	—60	.....	+711	.....	+1,825	.....	—1,546	.....	—322	.....
In year	—408	.....	—217	.....	—10,502	.....	—12,765	.....	—5,883	.....	—22,326	.....
In year	—9.6%	.....	—5.5%	.....	—4.2%	.....	—13.1%	.....	—12.4%	.....	—23.5%	.....

[1] All time peak. [2] Lowest since April, 1922. [3] Lowest since October 1922, due to shutdown of six Mid-Continent States. [4] Stocks, January 3, 1942.

a week by the unavailability of tank cars or slow return of cars.

On the Gulf Coast, markets remain quiet, in reflection of the lack of adequate transportation, some refiners stating that their storage tanks are full or nearly full. Tankers remain solely in service of the government, and tank cars are used where possible for shorter hauls to the East. Barges for shipping up the Mississippi River are providing limited market outlet, and some barges are being built and added to this service, but the inland waterway system can handle only a small fraction of the normal movement of oils from the Gulf Coast to the Atlantic seaboard.

In the western Pennsylvania refining district there is still some difficulty with the market for neutral oils, but the tone has definitely improved, and it is anticipated by some market analysts that a strong market will prevail again within a few months. All other products are in strong demand.

Underproduction Forecast By January Allowables

Production of crude oil and other petroleum during January probably will be around 50,000 barrels short of the daily average output called for by the schedule of the Petroleum Administrator for War, a deficiency of 1,500,000 barrels for the month.

This prospect is indicated by data on allowables prescribed in the 8 prorated states and by current trends of producing ability in Illinois and Mississippi, flush production states which are not prorated.

The indicated net underproduction will result from probable output under the recommended rates in California, Oklahoma, Illinois, and miscellaneous other states, although those deficiencies may be offset slightly by nominal overproduction in Texas.

Pertinent details from which these conclusions were drawn appear in an accompanying table.

Crude Production Higher; Kansas Up; Illinois Down

United States crude oil production averaged 3,838,690 barrels daily during the week ended January 16. The output was 17,600 barrels per day larger than that in the previous week.

The 8 prorated states, accounting for about 88 percent of the national total, showed an increase of about 43,000 barrels, having produced on the average 3,316,800 barrels daily, compared with 3,274,000 the week before. At the new rate, they were about 10,000 barrels above their combined state allowables, set in accordance with the petroleum coordinator's schedule of needed crude.

Arkansas production rose from 74,900 barrels daily in the week ended January 9 to 75,150 in the week of January 16, California from 771,000 to 773,500, Kansas from 256,400 to 300,650, New Mexico from 93,450 to 93,500, Texas from 1,329,200 to 1,330,050. Illinois declined from 253,850 to 235,100, Louisiana from 339,850 to 339,750, Michigan from 59,400 to 56,800, Mississippi from 63,350 to 58,650, Montana from 21,800 to 20,650, Oklahoma from 349,800 to 347,400, Wyoming from 89,250 to 87,650.

South Texas Oil Line Completed

Magnolia Pipe Line Company has completed a 15-mile 6-inch oil line from the Placedo field, Victoria County, to Vanderbilt, where connection is made with the company's South Texas trunk line system. The company has acquired Barnsdall Pipe Line Company's gathering system in the Placedo field, making initial runs January 9. This Placedo extension will enable Magnolia Pipe Line Company to step up its runs from the district by 10,000 barrels daily.

North Texas Line

The Texas Pipe Line Company is to lay a 19-mile combination 2- and 3-inch oil line from the Johnson ranch pool, Foard County, to its North Texas system in east part of county. This 11-well pool, with 150 barrels daily output, has been relying upon tank trucks since abandonment of the Gulf-Magnolia 10-inch trunk line from Panhandle to Ranger.

Petroleum Production Below PAW Recommendation Indicated for January Under Scheduled Allowables

(Barrels daily of crude oil, condensate, natural gasoline, and other petroleum liquids)

STATE	Recommended Total Petroleum Production in December (PAW Schedule)	State Allowable of Crude in December	Actual Production in 4 Weeks Ended December 26, 1942			Difference of Actual Crude Production from Allowable in December	Excess or Deficiency of Actual Total Production in December	Recommended Total Petroleum Production in January (PAW Schedule)	[8]Actual Production in Prospect for January, as Scheduled in Allowables or Forecast by Trends in Unprorated States			Excess or Deficiency of Total Actual Production Indicated for January
			[1]Crude Oil	[2]Natural Gasoline and Other Products	Total Petroleum				Crude Oil	Natural Gasoline and other Products	Total Petroleum	
Prorated States:												
Arkansas	77,300	74,885	73,650	2,970	76,620	— 1,235	— 689	78,300	74,826	2,100	76,926	— 1,374
California	815,000	771,100	762,500	42,215	804,715	— 8,600	— 10,285	815,000	771,000	44,000	815,000	[5] .....
Kansas	300,700	295,500	293,050	5,227	298,277	— 2,450	— 2,423	310,000	304,600	5,400	310,000	.....
Louisiana	326,100	300,100	315,050	20,521	335,571	+14,950	+ 9,471	347,500	320,500	27,000	347,500	.....
Michigan	63,800	63,675	59,550	114	59,664	— 4,125	— 4,136	63,700	58,430	125	58,555	— 5,145
New Mexico	99,700	93,700	94,500	5,726	100,226	+ 803	+ 526	105,300	93,300	6,000	105,300	.....
Oklahoma	403,900	373,900	365,350	29,969	395,319	— 8,550	— 8,581	400,600	373,600	30,000	400,600	[6] .....
Texas	1,350,400	1,372,859	1,386,600	103,728	1,490,328	+13,741	+139,928	1,426,800	1,307,553	119,290	1,426,843	[4]+ 43
Total 8 Prorated States	3,436,900	3,345,719	3,350,250	210,470	3,560,720	+ 4,531	+123,829	3,547,200	3,336,809	233,915	3,540,724	— 6,476
Unprorated Flush States:												
Illinois	274,100	.....	244,000	10,304	254,304	.....	— 19,896	272,600	[3]240,000	[3]10,000	250,000	—22,600
Mississippi	50,000	.....	58,950	.....	58,950	.....	+ 8,950	50,000	[3]55,000	.....	55,000	+ 5,000
Total 10 Flush Production States	3,761,000	.....	3,653,200	220,774	3,873,974	.....	+112,974	3,869,800	3,601,809	243,915	3,845,724	—24,076
Other States	254,900	.....	218,700	13,290	231,990	.....	— 22,910	254,400	[3]230,000	[3]13,000	[3]243,000	—11,400
Total United States	4,015,900	.....	3,871,900	234,064	4,105,964	.....	+ 90,064	4,124,200	3,831,809	256,915	4,088,724	[7]—35,476

[1] Data by American Petroleum Institute.
[2] Approximate; being same as output reported for October by Bureau of Mines.
[3] Estimate based on recent trends of production.
[4] Actual overproduction in Texas will be about 3469 barrels above this indicated excess, thereby amounting to about 3512 daily, in event of repetition of experience in December, when indicated excess was 136,459 but actual excess about 139,928.
[5] Although January allowables conform with recommended production, California's actual output of crude will be around 8600 barrels below allowable if December experience is repeated. Crude allowable is up 8500 barrels for January, following increases of 33,100 barrels for December and 15,000 barrels for November.
[6] Although January allowables conform with recommended production, Oklahoma's actual output of crude will be around 8550 barrels under allowable if December experience is repeated. Crude allowable for January is 5250 barrels higher than that for December.
[7] Actual overproduction in United States may be around 49,157 barrels daily, considering circumstances given in footnotes 4, 5 and 6, on Texas, California, Oklahoma.
[8] Under state proration orders, allowables generally cover crude only but take into consideration expected output of other petroleum liquids, so that all production will conform with OPC recommendation. Actual crude production has been falling short of allowable in California and Oklahoma, but has been close to allowable in other states. Details on state allowables for January include the following:

Arkansas: Crude oil allowable figure includes both oil and condensate; natural gasoline output estimated at 2100 barrels daily.

California: Figures here given for January are allowables as scheduled by Conservation Committee of California Oil Producers. However, official December crude allowable was underproduced about 8600 barrels, and January allowable is 8500 barrels above that of December.

Kansas: Allowables here given are subject to final approval by Kansas Corporation Commission.

Louisiana: Figures here given are not allowables but actual production contemplated by Conservation Department, allowing for estimated output of 27,000 barrels liquid hydrocarbons other than crude and estimated crude oil underproduction under scheduled allowables aggregating 339,653 barrels daily.

Michigan: These figures are January production aimed at under regulations which do not fix definite state allowable.

New Mexico: Allowable of all petroleum 105,300 barrels daily, of which it is estimated about 6000 daily will be accounted for by natural gasoline, butane, and propane.

Oklahoma: Figures given here are allowables, but state underproduced crude allowable about 8550 barrels daily in December and similar result may be expected for January, with allowable up 5250 barrels above December.

Texas: Texas Railroad Commission fixed crude allowable at 1,426,843 barrels daily; however, it estimated underproduction of 6.65 percent, or a net allowable of 1,307,553 barrels. This allowable does not include an estimated 119,290 barrels of unprorated distillate and other fluids which are produced daily, and which would bring the total net production to about 1,426,843 barrels daily.

U. S. Field Operations

Week's Results Tend to Encourage Continued Increase in Wildcat Work

While it is as yet too early for illuminating comparison, the tabulation of well completions in the United States (see page 57) shows strong probability that the growth of percentage of wildcat drilling as against all completions is to continue the increase noticed throughout 1942. The current week recorded 49 wildcats among a total of 278 well completions. The wildcat drilling resulted in 2 oil discoveries, 2 gas and 1 distillate.

Michigan observers believe important reserves have been added by strikes there, and a 30-mile step-out in Illinois is intriguing as test of a show is being made.

Both Upper and Lower Texas Gulf Coast had interesting developments in Wilcox sand, calculated to encourage more drilling. Influence was indicated in lease activity in DeWitt, Goliad and Bee counties in South Texas, while higher up the coast, deep work in Colorado and Montgomery counties had promise.

Napoleonville dome in Assumption Parish, South Louisiana, is productive on the flank, and much drilling is expected to follow on this and other domes in the area.

Oklahoma drilling seems to have assured another field in Pottawatomie County, and two pools are in process of being opened in Kansas.

West Texas promises more drilling in the Slaughter area because of extension success, and North Texas had some showings that were offset by failures.

California results in the week were such as to require a throw-back to '49 to deserve notice.

Index

United States Field Reports:

California	54
East Texas	52
Illinois	49
Indiana	49
Kansas	50
Kentucky	49
Louisiana	53
Michigan	56
North Texas	50
Oklahoma	49
Texas Gulf Coast	53
West Texas	50

Illinois Basin

Christian County Showing Indicates Production Extension 30 Miles West

An intensive lease and royalty play is underway in Christian County, 22 miles southeast of Springfield, where a prospective discovery well 30 miles from other production is nearing completion. Madison County wildcat spurs interest in west side of basin after making a small amount of oil from Devonian lime. Iola pool of Clay County, with more than 20 operations, becomes the state's most active area although it was discovered only a short time before the end of the year. The Patoka field, Marion County, one of the first pool's opened in the state's resurrected development, is given its third producing zone, Devonian lime.

Christian County: Casing has been set at William H. Marlow's Alice Ralph 1, Section 27-15n-2w, 22 miles southeast of Springfield, to test Devonian lime at 1905-08 feet. Seven-inch casing was replaced by 5½-inch in an effort to shut out water.

The well was shut in overnight and the hole began slopping over with oil. It flowed for brief intervals. Oil recovered from the well tested 37.1 gravity and on a cracking test showed 46 percent gasoline at 500 degrees, according to reports.

Because the well is in an area in which there had been little previous interest, royalty buying and leasing was underway on large scale.

Madison County: Kingwood Oil Company's Niggli 1, NE NE NE 29-5n-5w, a wildcat 10 miles northeast of the St. Jacobs pool, was to plug back and test Pennsylvanian sand at 570-90 feet after recovering only a small amount of oil from Devonian lime at 1872-80 feet.

Casing was perforated in the lime horizon and after a 1000-gallon acid treatment the well made ½ barrel of oil an hour. Production failed to increase after a second acid treatment of 2000 gallons.

Clay County: More than 20 operations are underway in the new Iola field where production is from both the Benoist and Aux Vases sands, despite heavy mud which has greatly curtailed drilling.

The first two successful completions in the pool, principally in Section 15-5n-5e, have indicated the area will have sustained production.

The discovery, Homer Luttrell's Reed Heirs 1, was completed in Benoist sand December 4 with an initial of 85 barrels a day and now is making about 65 barrels daily. The second completion, by the Texas Company, was initialed December 26 at 200 barrels from the Benoist and Aux Vases sands and still is making 190 barrels a day. The field apparently has been defined on the north by the abandonment by The Texas Company of a test ½ mile from the discovery. Another doubtful test north of the discovery, Gulf Refining Company's Edgewood 1, SW SW SE 10-5n-5e, which has been shut down, probably will set casing to test Aux Vases sand at 2379 feet.

Marion County: Adams Oil & Gas Company's Pugh 10, NW SE 29-4n-1e, Patoka field, was swabbing 10 barrels of fluid an hour from Devonian lime, 25 percent of which was water, the pool's first deep producer. Other productive zones in the area are the Cypress and Benoist sands.

A wildcat 6 miles north of Odin, Shell Oil Company's Sugg 1, NE NW NE 14-3n-1e, was coring Aux Vases sand at 1760 feet after finding both Cypress and Benoist dry.

Edwards County: Burr Lambert's Vanshoick 1, NW SE NW 18-1n-10e, 9 miles north and 2 miles west of Albion in wildcat territory, has set casing on Aux Vases saturation at 3158 feet.

Jefferson County: The discovery well of the Belle River field, Roy Lee's Walters-Hopkins Community 1, C NE NE 27-3s-4e, has been completed on pump with an initial of 360 barrels a day following an acid treatment of 1500 gallons. Total depth is 3091 feet in McClosky lime.

Illinois, Indiana, Kentucky Completions on page 57

Oklahoma

Pottawatomie County Test Has Production in Wilcox

A new Wilcox sand field apparently is assured for Pottawatomie County through showing of Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Bleeker 1, NW SE SW 28-10-2e. First Wilcox was topped at 5877 feet and drilled to 5885 feet. The lower 3 feet of a 5-foot core between 5080 and 5085 feet had saturation, and a drill-stem test, after 22 minutes, was flowing clean oil at an unrecorded rate, with good gas volume. This well is the most westerly production in the county, and is located 4½ miles northwest of the Centerpoint field which was discovered in April of last year, producing from Sampson.

Hughes County: Burke-Greis Oil Company's Strickland 1, NW NE NE 19-7n-10e, new gas discovery, has drilled

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THE OIL WEEKLY

deeper from Cromwell sand where an estimated 6 million feet of gas was found between 3820 and 3858 feet, and is now going to cable tools to test Viola lime. Casing has been set at 4836 feet, with bottom at 4850 feet.

McClain County: E. J. Kubat et al's Porter 1, C SW SE 21-5n-3e, 1½ miles south of Byars production, made 30 barrels on drill-stem test of Viola lime topped at 3469 feet and drilled to 3487 feet, with tools open 21 minutes. Oil is 37 gravity with no water showing.

Oklahoma Completions on page 59

Kansas

New Pools Showing In Pratt and Russell

Good saturation has been recorded in Arbuckle lime to indicate a new field in the Iuka sector. Skelly Oil Company's Knop 1, SWc SE 25-26-13w, north of the Simpson production in the Iuka sector of Pratt County. Top of the lime was at 4335 feet and pipe was run to bottom at 4339 feet, through 3 feet of good saturation, which is to be tested.

Russell County: Dickey Oil Company's Eulert 1, SWc NW 26-11-15w, 2½ miles east of Fairport, found saturation in both the Kansas City-Lansing and Arbuckle, but neither formation has been tested. Arbuckle was at 3323 to 3341 feet.

Barton County: Oil is in the hole at Bay Petroleum Company's Scheuffler 1, south of Ellinwood, where the lower section of Lansing is being tested perforations at 3176-3194 feet. Hole was carried to 3371 feet, dry and plugged back.

Ellis County: Darby Petroleum Company's Huber 1, C WL NE SW 31-12-20w, on the Ellis County side of Gugler field, has been given a potential of 337 barrels daily from Arbuckle at 3884 feet. This recent strike probably is an extension of Gugler.

Saline County: Deep Rock Oil Corporation's Hunter 1, NE NW SE 20-16-1w, a week-old Mississippi lime strike, tested 111 barrels in 21 hours and will treat.

Kansas Completions on page 57

West Texas

Slaughter Extensions Promise More Drilling

Major extensions are in store for the north portion of the Slaughter field. Gaines County discovery flows with aid of tubing packer. First deep test for Keystone field has accumulated sufficient shows in Lower Permian to warrant running pipe after reaching depth contract.

Hockley County: Jerry Hawkins et al's Mallet 57-A, projected 6500-foot test, 1⅛ miles north of nearest production in the Slaughter field, was drilling at 5500 feet, with 7-inch cemented at 5102 feet to protect oil saturation passed up in regular zone at 4910-94 feet. This outpost logged first lime at 4100 feet and solid lime at 4466 ft, elevation 3639 feet. Hawkins et al's Mallet 14-B, 1¼ miles north of the above test, 2-1/3 miles east by north of Cochran County sector of Slaughter field and same distance southeast of an isolated pumper, has bid for a major extension in logging oil saturation at 4849-4900 feet and 4910-29 feet, elevation 3638 feet. Five-inch pipe is cemented at 4839 feet to try for completion. Completion of these outposts as producers in regular Slaughter field pay will result in the drilling of scores of additional wells.

Gaines County: Shell Oil Company's Leaverton 1, recent discovery 4 miles southwest of Wasson field, attained greater importance through developing flowing production after landing tubing packer at 7375 feet in 5-inch at 7480 feet, with broken pay to 7772 feet. Production had ranged from 150 to 200 barrels of 34-gravity oil daily on swabbing tests after acidizing with 6500 gallons. The flow followed installation of packer, and on last report amounted to 91 barrels of oil in 21 hours. Performance of this well is being closely observed as it is the third sector of the county to produce below regular Permian, and deep tests are slated for the Cedar Lake field and also a geophysical high near Seagraves.

Winkler County: Three deep explorations are active in this county. Amon G. Carter's Walton-Pure 2-C, Keystone field, encountered additional oil-saturated lime in coring to 7700 feet, where a drill-stem test was pending. Tester used at 7417-75 feet yielded 100 feet of oil-cut mud with gas volume rated at 10,000 feet daily. Gas and sulphur water was recorded at 7000-7100-foot level. Magnolia Petroleum Company's Walton-State 20, between Keystone and Kermit fields, resumed drilling at 8445 feet on 11,000-foot objective, or water in Ellenburger: It was drilling Devonian chert at 8460 feet. Shell Oil Company's Blue 1, east edge of the county, reached depth contract at 8500 feet in Devonian chert, and will measure up to collect bottom-hole contributions. Additional aid is being sought of nearby lease owners to continue to the Silurian.

Wildcats: Locations have been made for the deep and shallow wildcats in Pecos County that were obligated at the December lease auction by University of Texas, and the 5000-foot test contracted by Phillips Petroleum Company in Block 16, Ward County, is to follow shortly. Substantial cash bonus is being paid by companies for leases on a trend north and south of the latter 4312-acre block, as the test will be located on the east rim of the Delaware basin.

West Texas Completions on page 59

North Texas

Shallow Gas Strike In Coke County

Cooke County has shallow gas strike, and oil shows passed up by two other wildcats in county. Joy pool lists first Strawn production. Wildcat failures in Jack and Montague counties.

Cooke County: R. D. Drilling Company's Gregory 1, northwest corner of a 126½-ac tract in the Thos. Toby Survey, A-1062, opened a gas area with natural flow of 2,400,000 feet of 700-Btu-content gas, having perforated liner at

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1574-1615 feet, total depth 1670 feet. This strike is ⅞ mile southeast of oil production in the T.C.U. pool. Panhandle Refining Company et al's Gordon 1, west edge of the county, was drilling shale at 2710 feet. Several promising sands were passed up after failing to respond on drill-stem test. Burk Royalty Company's Gladney 1, 3 miles southwest of Gainesville, tested water at 2255-2328 feet, and was drilling at 2410 feet.

Clay County: Shell Oil Company's Clark 3, southeast extension for Joy pool and a failure in its regular Mississippian zone, pumped 61 barrels of oil and 7½ barrels of water initial, producing from Strawn perforations at 3950-75 feet. A majority of the deep pools in the county have eratic production from Strawn. Roy Lee, Trustee's Maddox-Shell 1, 10 miles north of Spring pool, produced 190 barrels of 40-gravity oil daily on swabbing test, and is installing pump. The owner used 15,000 gallons of acid through perforations in Bend saturation at 5476-5506 feet. More exploratory work is to follow.

Jack County: Rathke Oil Company's Jagoda 1, ½ mile northwest of high-pressure gas production in the Joplin area, is rated at 10 barrels oil and 2,000,000 feet of gas daily from sandy lime at 4471-4530 feet. Hole will be deepened to 4700-foot lime, which showed wet gas in the discovery. Hanlon & Buchanan, Inc.'s Hensley 1-A, B. F. Terry Survey, 8 miles southeast of Jacksboro, reached depth contract and was awaiting orders in dry Ellenburger at 5964-70 feet. Barnsdall et al's Garrison 1, T. Nash Survey, quit in Ellenburger at 5775-5835 feet. Taubert-McKee and Sinclair Prairie Oil Company's Boyd 2, ½ mile south of their Ellenburger discovery in the Taubert-McKee pool, entered Ellenburger at 6270 feet, 15 feet high, and cored dry lime to 6280 feet. The discovery also was void of porosity in the top section of the dolomite.

Montague County: Youngblood & Foree's Benton 1, 3 miles south of Ringgold pool, yielded 150 feet of oil-cut mud on drill-stem test in Bend at 6121-28 feet, and abandoned at 6198 feet. Additional exploratory work may occur in this sector.

North Texas Completions on page 59

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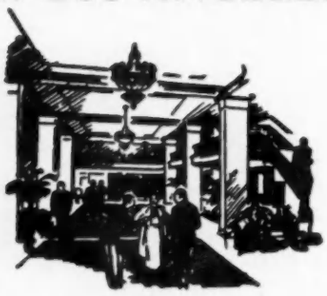

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East Texas

Limestone County Deep Test in Rodessa-Pettit

Limestone County deep prospect is testing Lower Trinity series. Nacogdoches County's distillate discovery failed to attain more production in Lower Travis Peak. Three wildcats prove dry in Paluxy.

Limestone County: Zephyr Oil Company's Peeples 2-B, second deep test for Tehuacana pool, was testing Rodessa and Pettit series with 5½-inch set at 4770 feet, having entered Pettit at 5020 feet and cored to 5090 feet.

Nacogdoches County: The Texas Company's Strahan 1, recent distillate discovery from Travis Peak perforations at 8610-60 feet, failed to develop additional gas in perforating at 8915-40 and 8960-72 feet, although the latter yielded 430 feet of gas-cut mud. This wildcat will be completed in the 8600-foot zone. Paluxy prospects: Hunt Oil Company's Parks 7, Rains County, abandoned in Paluxy at 5845-6214 feet in Smith County, B. F. Phillips et al's Starnes 1, Friendship area, entered Paluxy at 5478 feet, and was without shows in coring to 5510 feet. J. F. Lucey and Allen Guinberson's Moyer-Texaco 1, projected Smackover lime test for Dallas County, was drilling 2610 feet in Paluxy, topped at 2395 feet.

Wood County: Four operations are now scheduled in the Quitman one-well pool, with Amerada Petroleum Corporation and Delta Drilling Company making one test each. Shell Oil Company's Goldsmith 1, south offset to discovery, was drilling at 4950 feet, having logged Austin chalk at 3895-4015 feet, and its Blalock 1, north offset to the Paluxy producer, was spudding.

East Texas Completions on page 59

Southwest Texas

Wildcat Showings Revive Interest in Wilcox Drilling

Wilcox trend development is becoming more active with leasing and drilling leading a brisk pace in DeWitt, Goliad and Bee counties. Interest in this sand in this particular area is accentuated with wildcats showing for production. Although most Wilcox discoveries so far tend to produce gas and distillate, some of the wells produce lower-gravity oils. Geophysical and leasing activity also is showing an increase with deeper wells in store in the future.

Drilling: North of Nordheim in DeWitte County, John G. Mayo of Houston is reported preparing to drill a Wilcox wildcat on a 2000-acre farmout from Tide Water Associated Oil Company. The well, said to be staked in W. Quinn survey, is on a geophysical prospect located by the company while making a general survey of the area. The test will be drilled to 7500 feet or deeper.

This location is near Nordheim townsite where Tide Water is drilling and testing Mueller 1, second test in area and ½ mile northeast of the company's Gips 1 Wilcox discovery. The second well, although reported to have run lower structurally than the discovery, found sands carrying oil and gas odors at 7060-80 feet, 7087-91 feet, 7095-7100 feet, 7150-66 feet, 7182-95 feet. A drill-stem test was run at 7190-96 feet, but recovered salt water. A sand showing oil was found at 8395-8400 feet.

Karnes County: Blanco Oil Company and Al Buchanan are preparing to drill a 7200-foot Wilcox wildcat two miles northeast of Green townsite. Location is on a Stanolind Oil & Gas Company farmout and is northeast of Stanolind's deep test on Gould tract which had shows in top of Wilcox in 5800-foot sand in the north part of Bee County. However, these same operators are drilling at shallow depth in Cook 1, Wilcox test ½ mile east of Stanolind's Gould test.

Also in Karnes County and four miles southeast of Kenedy townsite, Phillips Petroleum Company is testing Reasoner 1, wildcat in Carlos Martinez survey that showed 600 feet of 47-gravity oil on a drill-stem test at 6580-90 feet in Wilcox. Hole is bottomed at 7756 feet in salt water sand. Casing is due to be set to 6650 feet for testing.

Goliad Activity: Transwestern Oil Company is reported preparing to drill a Wilcox test, possibly to 8000 feet, on its Slick area block as a result of extensive geophysical activity and lease buying. The test is due to be spotted on Goliad-DeWitt County line.

East of Goliad townsite, Humble Oil & Refining Company is expected to announce a 6500-foot wildcat in southeast portion of W. D. Durham survey. Humble has a fair size block in the area and the well probably will be in the east portion of the acreage.

In the South Burnell-North Pettus area where Goliad, Bee and DeWitt counties join, Pettus Oil & Refining Company is credited with working out plans for a Wilcox test. This is result of considerable geophysical and geological work in the area.

DeWitt County: Adams Oil & Gas Company has completed an excellent gas and distillate producer at Yorktown, Wilcox-sand field, with Pieper 1, second well in the area, flowing estimated 32, barrels of distillate daily along with 15,000,000 cubic feet of gas. Perforations were made in Wilcox at 7185-7200 feet with 58 shots. This producer found Vicksburg at 2865 feet, Jackson at 3131 feet, Hockley at 3288 feet, Cockfield at 4019 feet, Eponides Yegua at 4233 feet, Text Smithville at 5739 feet and top of Carrizo member of Wilcox at 7075 feet. Hole is bottomed at 9100 feet with 7-inch casing set to 7270 feet. It is ¾ mile northeast of Adams' Berck 1 discovery.

Duval Discovery: George W. Strake is continuing tests in Yates Estate 1,

wildcat discovery three miles northwest of Fitzsimmons field. Last test was made in lower portion, about four feet, of Government Wells sand in perforations at 3168-72 feet. This test yielded 3 barrels of oil hourly with 940 pounds working pressure. Another test is being made at 3723-31 feet in Pettus sand. Depth is 4010 feet with 5½-inch casing set to 3850 feet. The Pettus and Government Wells sands are only two that look promising from production viewpoint.

Southwest Texas Completions on page 59

Texas Gulf Coast

Testing Deep Wilcox in Colorado and Montgomery

Interest is being shown in a deep Wilcox wildcat test on Ramsey prospect in Colorado County with operators setting casing to make several production tests. Although no new wells have been staked for Wilcox development in past few days, considerable geophysical work is being conducted to outline prospects in areas with Wilcox production possibilities. Meanwhile, a new and deeper Wilcox sand is being tested at Lake Creek in Montgomery County, a field that already has several producing horizons.

Colorado County: Cities Service Oil Company is making its first flow test in Frank Stephens 1, 10,504-foot Wilcox wildcat in Ramsey area after setting 5½-inch production pipe to bottom of hole. Although definite details as to sand conditions have not been released, it is understood that sufficient sands were found to make a distillate producer and open a new field. Several levels are due to be tested. Tops of upper formations have been released as follows: Catahoula at 1160 feet, Frio at 2454 feet, Discorbis Yegua at 5173 feet, Cerat at 6271 feet and Operculina at 6391 feet. Original proposed depth was 10,000 feet, but based upon showings at upper levels the hole was drilled to present depth.

Cities Service worked the area extensively with seismograph before entering the area, owning approximately 5000 acres in the block. Pan American Production Company has acreage to the east and Tide Water Associated Oil Company has leases to the west. Location is on a 489-acre tract in P. K. Bartelson survey, Abstract 84. It is north of Eagle Lake and 10 miles northeast of Columbus townsite. Colorado County has another prolific field producing from Wilcox, it being at Sheridan which yields oil from several horizons.

Buck Snag: Meanwhile, another portion of the county is not without its new development. In the Buck Snag area Shell Oil Company has staked Union Central Life Insurance 1, east of Schiurring 1, which opened Cockfield production last year. The new test is projected to 7000 feet and is on a 280-acre tract in I&GN survey, Abstract 313.

Montgomery County: Superior Oil Company of California is opening a new producing section in Wilcox at Lake Creek, already a multiple-sand pool. Operators are acidizing McWhorter 5-A, north edge test. Prior to the acidization, pipe was perforated at 10,244-55 feet and flowed 541 barrels of 52.2-gravity oil through 1-inch chokes on top and bottom. The well is on a 3175-acre tract in T. J. Nichols survey, Abstract 397. Total depth is 10,249 feet with casing set near bottom. The company has wells in this field producing from above and below the 10,244-foot level.

Brazoria County: A deep gas or oil discovery in the Hall's Bayou area is apparent with Humble Oil & Refining Company testing Houston Farms 1 in perforations at 10,865-85 feet. The well has been cleaning up and flowing mostly gas, no oil. It is credited with having sufficient sand sections to make a gas producer. Original plans called for the hole to be drilled to 14,000 feet, which if completed would have been the deepest well east of the Rockies. However, drill pipe was stuck and the hole is now bottomed in sidetracked hole at 10,918 feet. Location is in Section 2, Perry & Austin survey, Abstract 109. It is 1½ miles southwest of George W. Strake's Griffith 1, which flowed considerable oil and distillate before being abandoned in 1941 due to mechanical trouble.

Wharton County: Continental Oil Company has completed a gas discovery north of Louise and is preparing to drill a second test to define the area further structurally. The gas discovery is Allenson 1 in WCRR 41. It was perforated at 4160-65 feet and flowed 1,000,000 cubic feet of gas through 3/16-inch choke with pressures equalized at 1700 pounds on tubing and casing. Total depth is 5523 feet with 7-inch casing set to 4430 feet.

Continental's second well is Swanson 1, 10 miles northeast of Louise and 2 miles east of Allenson 1 discovery. Second test is on 98-acre tract in WCRR survey, Abstract 381. It is projected to 6000 feet.

Texas Gulf Coast Completions on page 59

Louisiana Gulf Coast

Napoleonville Well Spurs Interest in Dome Flanks

Interest in salt dome development is showing an increase in the coastal belt with George Echols and Tide Water Associated Oil Company opening first production at Napoleonville in Assumption Parish. With this discovery coming as a result of three previous deep flank wells, all abandoned, the flanks of this big structure are scheduled to be drilled extensively. Although wildcatting as a whole is at a comparatively low ebb, two wells are preparing to get under way.

Assumption Parish: A Miocene-sand oil field has been opened on the east flank of Napoleonville dome with George Echols and Tide Water Associated Oil Company completing a wildcat producer, Kessler & Sternfe's 1, which flowed 10.5 barrels of 37.2-gravity oil hourly through ⅛-inch choke after perforating at 9032-39 feet. While cleaning and flowing the well showed 1700 pounds flowing pressure with no official gauge yet completed. Bottom of the hole is 10,474 feet, and at this point the drill pipe was stuck, but the well was plugged back later and completed.

Echols, Tide Water, and J. Ray McDermott are associated in the ownership of approximately 1100 acres on the

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Berwick
Houma
New Iberia
Lake Charles

flank. Location of the test is south of the northwest corner of Section 136-12s-14e. The well was spudded November 14, 1942. Electrical surveys were run to 9100 feet and 9600 feet.

This piercement-type dome was discovered by Gulf Refining Company in 1916 with refraction seismograph, and 18 tests have been drilled, some of them penetrating deep levels while most of them being on top of the dome. Gypsum has been encountered as high as 414 feet and salt as high as 688 feet. Most acreage around the flanks is held by larger companies. The discovery is Echols' third, having drilled previously Simoneaux 1 and Armelise Planting 1. Falcon Seaboard Drilling Company also drilled a deep test in 1940 on Simoneaux acreage, finding shows. William Helis et al now are drilling another wildcat below 9800 feet on southeast flank of dome in Section 17-12s-13e.

St. Mary Parish: Arkansas Fuel Oil Company has projected a 12,000-foot wildcat test two miles east of Bayou Sale townsite and close to Bayou Sale field. This well, deepest ever drilled on this particular prospect, is Shadyside Company 1 and is spotted 2907 feet southwest along northwest line in Section 63 from southeast corner of Section 5-15s-10e. Drilling is due to start soon.

Vermilion Parish: What may prove to be a new field is being tested in the Pecan Island area. Humble Oil & Refining Company's Louisiana Land & Fur 1, Section 34-16s-1e, is credited with having a sand at 10,800-52 feet showing oil and gas, and another section at 11,-221-95 feet showing gas and distillate. Depth is 12,057 feet, plugged back to 11,286 feet and 7-inch casing is set to around 11,449 feet.

Beauregard Parish: General Crude Oil Company et al are moving in materials to spud Baldwin 1, wildcat north of Bear townsite in the southeast portion of the parish. Dixie Drilling Company has well contract for the 9000-foot Cockfield sand test. It is in Section 27-6s-9w.

Louisiana Gulf Coast Completions on page 58

North Louisiana

North Carterville Well To Be Put on Pump

Gulf Refining Company will deepen Miller 1, NE NE 14-20n-8w, Claiborne Parish, deep wildcat now below 9547 feet. Location is approximately 3 miles south of Homer field.

Four miles southeast of Haynesville Pettit lime production, Sylvester's Meadow 1, SE SW 23-22n-7w, recovered gas and water flow from Pettit lime, however, perforations in Pettit lime have been squeezed and another test will be made.

North Carterville: H. L. Hunt's Nebo 1, SW SE 3-23n-12w, Bossier Parish, in last estimate, settled down to flow 60 barrels of 38-gravity oil in 48 hours from Pettit lime perforations at 6029-6122 feet. A pumping unit will be installed before official gauge is made. Pipe line is being laid and four tests are being drilled by Hunt, which will also explore Pettit lime for production.

The new Pettit lime tests are north of shallow Cartersville Blossom sand and Tokio production. Though production is small, a few pumpers still operate in the vicinity from the shallow horizon.

Morehouse Parish: Merren's Bonner 1, C NW NW 23-22n-7e, checking low on formation, quit in Buckner at a level where Smackover lime was expected. Bonner 1 topped shallow Wilcox at 1420 feet, Midway at 2040 feet, chalk encountered at 2517 feet extended to 2670 feet. Cotton Valley was drilled through and the test abandoned at 6030 feet.

North Louisiana Completions on page 58

California

Historic '49 Area Leased for Gas Search

Historied grounds of California gold-rush days last week passed into the hands of oil operators when Natomas Company leased its 5700 acres of holdings on the east side of Sacramento River, between Sacramento and Marysville, to Richfield Oil Corporation.

Richfield regards the properties a prospective source of gas, due to favorable location in relation to successful production already developed in that region by Standard Oil Company of California and Buttes Oilfields, Ltd. Richfield proposes to start a well within the next 60 days.

Kern County: Trico Oil & Gas Company's wildcat, Trico-Amalgamated 1,

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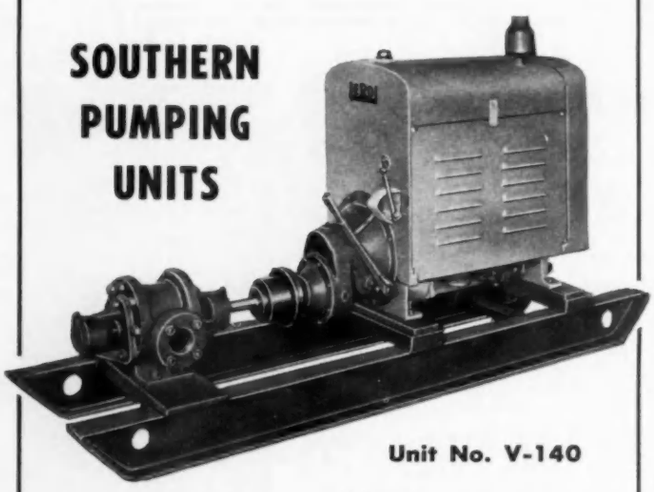

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GARLOCK

announced as a test of East Jasmine area to follow up interesting showings developed nearby last summer by a Wilshire Annex wildcat, will be located in Section 17-25-28.

Republic Petroleum Company's wildcat, Portals 2, in 5-20-29, Edison area, is being prepared for abandonment at 4090 feet. Sand intervals between 3720 and 4032 feet were unproductive.

Reserve Oil & Gas Company's 34-1, wildcat in Section 34-11-19, Grapevine-Tejon area, has become just one more addition to the long list of failures chalked up in determined and costly exploration of Tejon Rancho during the past decade. Well was abandoned at 4926 feet after unsuccessful tests of 25 feet of fairly saturated oil sand at 4599-4624 feet. Santa Margarita sand was cored at 3580-3590 feet and 3680-3690 feet. Reserve and Richfield Oil Corporation, which holds large sub-leases, each reportedly considered still another try.

Los Angeles County: The Texas Company is grading site for a new try in La Mirada-West Coyote area, McNally A-3 in 22-3-11. This wildcat is a follow-up of the promising shows in McNally A-2 wildcat, three-fourths of a mile south, abandoned at 9658 feet last August after unsuccessful tests.

Santa Barbara County: Standard Oil Company of California's Cat Canyon area wildcat, South Basin-Lloyd Com. 1, Section 15-9-33, is being prepared to abandon at 7250 feet, after recovery of mud and spots of tar on tests. Top of Monterey shale was logged at 4700 feet.

Ventura County: Doheny - Battson-Los Nietos Company's wildcat, Elkins 1, in Section 6-3-19, gave promise for a short time of making production but sanded up. Sand was drilled at 4835-4915 feet. After bailing it flowed considerable oil and mud. Total depth is 5681, plugged back to 4919 feet.

California Completions on page 57

Michigan

Substantial Additions to Oil Reserves Indicated by Two Wildcat Showings

Two structures which have been regarded as favorable prospects appear certain to produce new oil reserves for Michigan this year. Second deep well on Winterfield structure disappointing as deep well in old Dorr field, Allegan County, develops promise.

Missaukee County: Sun Oil Company's State A-1, S½ SW NW 11-23n-5w, Enterprise Township, flowed 335 barrels of fluid, estimated 15 percent water, on a 6-hour production test from Dundee lime-dolomite at a plug-back depth of 3240 feet. Previously the well had flowed 141 barrels of fluid in 10 hours. Both tests were made after the well had been treated with 2000 gallons of acid through perforations of 5-inch casing. The well was shut in for tankage.

Enterprise Township development is regarded in some quarters as the most important in Michigan this winter. The test was located by subsurface geology backed by considerable core drilling information and deep well points in the general area. A pronounced structure was evidenced by earlier work.

Sun originally drilled the hole to 4596 feet, testing the Richfield-Sylvania section. This horizon showed some oil but not enough to warrant production. Hole was plugged back to 3443 feet and perforated in the Dundee, which on the original drilling was cored for a 418-foot section. Top was at 3184 feet.

Preliminary analysis of fluid showed 36-8-gravity oil. Operators were not able to determine the source of the water. A 62-barrel water blanket was used in the acidizing.

The wildcat is located 20 miles northwest of the Headquarters pool and approximately the same distance northeast of the Winterfield pool.

Ogemaw County: Weber and associate's completed State F-1, NW SW NW 33-24n-2e, Foster Township, for 22 barrels of oil per day, pumping from Richfield dolomite section at 4287 feet. Hole was drilled to 5367 feet and plugged back. This is the first production on the Rose City structure.

Osceola County: Sun Oil Company's Wilcox 3, N½ NW SW 27-18n-8w, Evart field, flowed 303 barrels in 5 hours, for best natural producer drilled in the field. Located ½ mile south and ¼ mile southwest of previously drilled wells, Wilcox 3 offers new extension prospect for field. Production is from Dundee lime at 3723 feet.

Ohio Oil Company is standardizing at 6-inch casing point on Zimmerman 1, S½ NE SE 28-18n-9w, Cedar Township, currently rated as one of the best wildcat prospects of the winter. Hole will be carried to Dundee horizon.

Clare County: Pure Oil Company's Nearhood 1, W½ NW NW 33-20n-6w, second deep test in Winterfield field, suspended drilling at 5031 feet to test 1000 feet of fluid standing in 5-inch casing. It carried show of oil at 4954 feet, increase show of oil and some water at 4991 feet and more water at 5015 feet. Test showed good porosity but was definitely assigned a flank position on the structure, about 10 feet off from the discovery McClain 1, Section 30, two miles to northwest. McClain produced 200 barrels high-gravity oil per day initially from 5060 feet, with a dolomite section the source.

Gulf Refining Company's Oman 1, C NW NW 8-17n-4w, a structurally-high well, logged Dundee lime at 3904 feet and a water formation at 3960 feet. Hole has been carried to 4770 feet where it was shutdown to wait shipment of blowout preventers. It will be carried to 5100 feet or more.

Allegan County: Muskegon Development Company's Podurgiel 1, Section 29-4n-12w, first deep well in the old shallow Dorr field, again is under test after shelving first plans to abandon at 3304 feet. Hole was plugged back to a show in the Monroe at 3035-38 feet and acidized with 500 gallons. Shot brought in sufficient free oil to prevent complete bailing down of the hole on a 6-hour test. If commercially productive test would be first to produce oil from that horizon in Southwest Michigan.

First sale of leases on state owned lands will be conducted by the lands division of the Michigan Department of Conservation January 28-29, P. J. Hoffmaster, director, announced. Approximately 70,000 acres, all listed as wildcat, will be offered.

Michigan Completions on page 58

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Trading Post Section, THE OIL WEEKLY
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United States Well Completions

ARKANSAS

Columbia County—Dorcheat: Arkansas Fuel Oil Co.'s Barton 1, nw nw 14-18n-22w, old td 8910 ft, due to high sulphur content or high gas pressure from Smackover lime below packer set at 8825 ft leaks developed in packer necessitating cement job to new td 8300 ft, perf Cotton Valley 7835-47 ft, flow 110 bbls, 3/16-in, 63.8 gr.

Columbia County — Macedonia: Grady Vaughn's McMahan 1, s½ sw 17-18s-21w, perf Cotton Valley 8142-64 ft, flow 15 bbls hr, 46.5-gr, ¼-in, 5½-in to 8961 ft, tp 200, cp 1300, shut in for tanks, td 8975 ft.

Grady Vaughn's Jameson-Snider 1, s½ nw 20-18s-21w, flow 200.63 bbls 63.2 gr, 12/64-in, tp 2450, gor 1300-1, 5½-in to 8940 ft, td 8947 ft.

Lafayette County—Midway: Southwood Oil Co.'s Hodnett 7, c sw ne 18-15s-23w, perf 6353-6406 ft, open hole 6430-6466 ft, flow 204 bbls per day, 10/64-in, tp 650, td 6466 ft.

Union County—New London: Marine Oil Co.'s Frost 6, ne ne 12-18s-12w, flow 175 bbls, 12 hrs, 31-gr, perf 5668-86 ft, td 5925 ft.

ARKANSAS WILDCAT

Bradley County: Placid Oil Co.'s Murphy 2, abnd 6300 ft.

CALIFORNIA

Fresno County—Coalinga Old Field: Standard's 109-31C, 1690 ft s, 1695 w nec 31-30-15, pump 53 bbls 27-gr, Kreyenhagen 3181 ft, td 3190, pd 2930 ft.

Standard's 108-35A, 993 ft s, 1754 w nec 35-19-15, pump 17 bbls, 150 ft perf 3045 ft, td 3045 ft.

Shell's 106-36, 1458 ft n, 328 e swc 36-19-15, pump 157 bbls, 127 ft perf 3657 ft, td 3660 ft.

Fresno County — Jacalitos Hills: Wilshire Annex Oil Co.'s 47-26E, 1425 ft n, 804 w s¼c 26-21-15, flow 67 bbls 40.8-gr, 13/64-in, 23 ft perf 3887 ft, oil sand 3860-3881 ft, td 3887 ft.

Fresno County—Riverdale: Amerada's Lawton F-33-26, 510 ft s, 660 e c 26-17-19, flow 212 bbls 38-5-gr, 12/64-in, 1500/50 lbs, perf 6675-6685, 6655-6665, 6620-6630 ft, td 6900, pd 6850 ft.

Amerada's Leal F-21-26, 560 ft s, 560 w n¼c 26-17-19, flow 19 bbls, 18 ft perf 6824 ft, td 7100 ft, pd 6880 ft.

Kern County—Antelope Hills: Shell's Williams 3-6, 1647 ft s, 342 e nwc 6-28-20, flow 502 bbls 16.5-gr, 28/64-in, 90/0 lbs, 95 ft perf 2315 ft, td 2320 ft.

Kern County — Belridge South: Belridge's 85A-32, 2250 ft n, 260 w sec 32-28-21, pump 5 bbls 16.8-gr, perf 424-569, 729-800 ft, td 800 ft.

General's Belridge 1A-3, 238 ft s, 323 w nec 3-29-21, pump 50 bbls 16.3-gr, perf 471-704, td 790 ft, pd 705 ft.

Ohio's Hopkins Fee 12, 769 ft s, 1682 w nec 4-29-21, pump 48 bbls 26-gr, perf 572-817 ft, oil sand 573 ft, td 840 ft.

Kern County—Buena Vista Hills: Standard's 85-27B, 1875 ft n, 1415 e swc 27-31-23, pump 26 bbls 29.6-gr, 185 ft perf 3445 ft, td 3639 ft.

Kern County—Kern Front: Standard's 32, 996 ft n, 1383 e swc 15-28-27, pump 98 bbls, 170 ft perf 2413 ft, td 2417 ft.

Westates Pet. Corp.'s Cauley 41, 2070 ft s, 990 e nwc sw nw 16-28-27, pump 125 bbls 16.3-gr, perf 2723-2883 ft, td 2903 ft.

Kern County—Kern River: Tide Water's Chicago Crude 10, 550 ft n, 510 w c 30-28-28, pump 40 bbls, 53 ft perf 1082 ft, td 1082 ft.

Kern County—Midway-Sunset: North Amer. Oil Cons.' Lockwood 40A, 697 ft n, 742 w s¼c 16-32-23, pump 21 bbls 11-gr, 576 ft, perf 1209 ft, td 1209 ft.

Richfield's Southwestern 13, 1917 ft n, 3692 e w¼c 2-31-22, pump, no est, perf 996-1120 ft, td 1195 ft.

Kern County—Mount Poso: Chanslor Canfield's Mon. 18, 518 ft s 2059 e nwc 26-27-28, pump 45 bbls 63 ft perf 1535 ft, td 1535 ft.

Kern County—Poso Creek-Premier: Standard's 8-9, 985 ft n, 330 e w¼c 9-28-27, pump 171 bbls, 173 ft perf 2790 ft, td 2800 ft.

Kern County — Round Mountain: Shell's Caldwell 24, 1503 ft n, 730 e swc 7-28-29, pump 60 bbls, 54 ft perf 1850 ft, Vedder 1810 ft, td 1850 ft.

Los Angeles County—Coyote, West: Standard's Murphy-Coyote 130, 213 ft w, 272 n sec Sec 18, flow 588 bbls 30.7-gr, 36/64-in, 200/0 lbs, 465 ft perf 5963 ft, td 5970 ft.

Los Angeles County—Del Valle: Ohio's Vasquez 5, 1017 ft n, 330 w sec 17-4-17, flow 520 bbls 39.4-gr, 24/64-in, 1600/1700 lbs, 3,388,000 gas; Vasquez 5017 ft, Videgain 5705 ft, 94 ft perf 5807 ft, td 5810 ft.

Los Angeles County—Wilmington: Zephyr Oil's Zephyr-Banning 2, 912 ft n, 491 w c/1 Banning Blvd projected sly & State St, pump 50 bbls 14.5-gr, 225 ft perf 3467 ft, td 3490 ft.

Los Angeles County—Oak Canyon: Western Gulf's Wickham 1, 432 ft n, 1723 e swc 32-5-17, flow 235 bbls 32-gr, 20/64-in, 200/850 lbs, perf 7055-7105 ft, td 7166 ft.

Orange County—Huntington Beach: D. D. Dunlap's 18, 495 ft n, 425 w c/1 Grafield & Huntington Beach, pump 110 bbls 19.6-gr, 40 ft perf 3870, td 3870 ft.

Ventura County—Ventura Avenue: Shell's Taylor 157, 12,060 ft w, 415 n c/1 No. 11, flow 1000 bbls, 16/64-in, 500/0 lbs, 1287 ft perf 949 ft, td 9500 ft.

CALIFORNIA WILDCATS

Kern County—Devils Den Area—Failure: Continental's Mabry 3, 1650 ft n, 330 w s¼c 26-26-18, abnd 5164 ft in hard cretaceous shale.

Kern County — McFarland Area — Failure: Tide Water's Strine 32-15, 990 ft s, 1650 e nwc 15-26-26, granite 6520 ft, abnd 6529 ft.

Kern County — Midway-Sunset — Failure: George F. Getty's Fleming 2, 500 ft n, 330 e c 32-31-23, abnd 3246 ft.

Kern County—Round Mountain Area—Failure: General's Tarabino 1, 285 ft s, 330 w e¼c 6-29-29, 3237 ft, barren Vedder 3082 ft, abnd 3237 ft.

D. G. Vedder's Bell 15, 240 ft n, 1085 w e¼c 12-28-28, Vedder 1998 ft, abnd 2004 ft.

San Luis Obispo County—Midway-Northwest Area—Failure: Chanslor Canfield's 25-1, 3720 ft s, 69 w n¼c 1-31-21, ran into vertical beds of hard shale and abnd 5524 ft.

INDIANA

Daviess County: J. W. Cannon's Robert Beck 3, nw ne se 8-2n-5w, Paoli 630-639 ft, 3 bbls, 639 ft.

INDIANA WILDCAT

Marshall County—Failure: John E. Short's J. Schroeder 2, ne ne nw 6-34n-1e, abnd 285 ft.

ILLINOIS

Clay County: W. C. McBride's Berlin 1, nw se nw 10-3n-7e, Cyp 2617 ft, 30 bbls, 2626 ft.

Hamilton County: Ohio's Smith 3, se se nw 24-6s-5e, abnd 3141 ft.

Texas Co.'s Irvin 7, ne ne ne se 27-6s-6e, gas input, 3100 ft.

Wabash County: Sinclair Prairie's Majors 1, nw nw sw 2-1s-13w, Cyp 2332-2342 ft, 55 bbls, 2459 ft.

Wayne County: Deep Rock's St. Louis Land Bank 1, c nw se 7-1s-8e, McCl 3182-86 ft, pb 3293 ft, 270 bbls, td 3319 ft.

White County: S. C. Yingling's Reeves-Betz 2, ne sw sw 20-3s-14w, Cyp 2734-2750 ft, 160 bbls, 2755 ft.

S. C. Yingling's Bretts 4, w½ nw nw se 20-3s-14w, Cyp 2792-2808 ft, 175 bbls, 2810 ft.

Sinclair-Wyoming's Donald 10, ne ne sw 21-4s-14w, AV 2830-42 ft, Bethel 2699-2712 ft, 135 bbls, 2855 ft.

Amerlagene Inc.'s Rudolph Unit 4, ne se ne 18-4s-10e, TS 2512-23 ft, 24 bbls, 2542 ft.

Jarvis & Marcell's Spencer Comm. 3, sw sw sw 31-4s-11e, Degonia 1938-1947 ft, 100 bbls, td 2705 ft.

Minerva Oil Co.'s McAlister 1, se nw sw 33-6s-10e, abnd 3100 ft.

ILLINOIS WILDCAT

Clay County — Failure: Delk Investment's Newman 1, ne sw nw se 8-2n-5e, abnd 3071 ft.

Jasper County—Failure: Helmerich & Payne

Wells Completed in the United States in Week Ended January 16, 1943

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

STATE OR DISTRICT	FIELD COMPLETIONS: New Wells Oil	Gas	Distillate	Water Input	Gas Input	Water Disposal	Dry	Total	Old Wells Drilled Deeper: Oil	Gas	Dry	Total	WILDCAT COMPLETIONS: Oil	Gas	Distillate	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama																1	1				1
Arkansas	4							4								1	1	5	1	6	5
California	25							25								6	6	31	24	76	67
Colorado																				3	
Illinois	8				1		2	11								5	5	16	45	97	170
Indiana	1							1								1	1	2	5	9	20
Kansas	8						7	15	1			1				8	8	24	45	91	139
Kentucky	1							1								1	1	2	6	11	11
Louisiana	8						4	12								1	1	13	10	29	82
North Louisiana	2						1	3										3	2	5	
South Louisiana	6						3	9								1	1	10	8	24	
Michigan	2							2					1			2	3	5	4	19	51
Mississippi																					18
Montana																				12	11
Nebraska																					3
New Mexico	6							6								1	1	7	3	15	19
New York	11			6				17										17	17	52	67
Ohio	3	10					5	18			1	1						19	23	61	77
Oklahoma	6						2	8	2			2				5	5	15	49	87	117
Pennsylvania	38	3						41		1		1						42	45	135	115
Texas	36	5					10	51	1	1		2	1	2	1	13	17	70	65	215	531
East Texas	1							1										1	3	8	
North Texas	5						2	7	1			1	1			2	3	11	11	49	
West Central Texas	1	1					1	3		1		1		1		2	3	7	7	17	
West Texas	13							13						1		2	3	16	12	46	
Texas Panhandle	4	2					1	7										7	4	18	
Gulf Coast, Upper	4						3	7								1	1	8	5	15	
Gulf Coast, Lower	3	2						5							1	3	4	9	12	33	
Southwest Texas	5						3	8								1	1	9	10	26	
South Central Texas																2	2	2	1	3	
West Virginia		6					4	10										10	19	54	46
Wyoming																			5	7	5
Total United States	157	24		6	1		34	222	4	2	1	7	2	2	1	44	49	278	357	979	1,555

et al's Milliman 1, sw nw sw 1-5n-10e, abnd 2966 ft.

St. Clair County—Failure: V. J. Nolan's J. D. Schoene 1, se se sw 26-2n-6w, abnd 2689 ft.

White County—Failures: Delk Investment's Joe Doerr 1, sw ne se 34-4s-9e, abnd 3405 ft.

Skelly's Mobley 1, sw se se 14-7s-8e, abnd 3067 ft.

KANSAS

Barton County—Kraft-Prusa: Solar Oil Co.'s Schartz 4, se nw ne 18-16s-11w, Arb 3253 ft, 1809 bbls, 3268 ft.

Barton County — Ainsworth: Continental's M. E. Ford 3, nw se nw 10-17s-13w, Arb 3336 ft, 3000 gal acid, pump 491 bbls oil, 20 wtr, 3345 ft.

Barton County — Semi-Wildcat: E. Jonas' Musenberg 1, sw sw nw 2-19s-11w, Arb 3454 ft, abnd 3485 ft.

Butler County — Eldorado: Cities Service's Chesney 124, c sw ne 21-25s-5e, Marmaton 2177 ft, 2000 gal acid, shot 30 qts, pump 30 bbls oil, 15 wtr, 2200 ft.

Cities Service's Hegberg 115, c ne ne 28-25s-5e, K.C. 1931 ft, Lans 1647 ft, pb to 2075 ft, 1500 gal acid, pump 30 bbls, 2226½ ft.

Cowley County—Semi-Wildcat: E. B. Shawyer's Green 1, c e½ nw nw 5-30s-4e, Arb 3112 ft, abnd 3130 ft.

Cowley County—Darien Area: Phillips' Otto 1, ne ne nw 4-31s-4e, Arb 3328 ft, abnd 3338 ft.

Ellis County—Shutts: Phillips' Weige 2, ne nw ne 19-12s-17w, Arb 3733 ft, abnd 3765 ft.

McPherson County — Crowthers: Westgate-Greenland's Crowther A-2, c s½ ne nw 26-17s-1w, Miss chat 2790 ft, 2000 gal acid, 3000 bbls, 2806 ft.

McPherson County—Roxbury: E. K. Carey's Bishop 1, c s½ nw ne 30-17s-1w, Miss 2700 ft, abnd 2722 ft.

Pratt County—Cunningham: Skelly's Moore 7, c e½ nw sw 25-27s-11w, Lans 3437 ft, 3000 gal acid at 3439-87 ft, pump 280 bbls oil, 124 wtr, 3487 ft.

Rice County—Geneseo: Adair-Morton et al's Motter 1, sw sw se 19-18s-7w, Arb 3250 ft, abnd 3257 ft.

Russell County — Hall-Gurney: Coralena's Fink 1, c se sw 15-14s-14w, Lans 3031 ft, pay 3251-55 ft, 6000 gal acid, pb to 3259 ft before acid, pump 179 bbls, 3308 ft.

Stafford County—Drach: Stanolind's Harms 3, n½ se nw 18-22s-12w, Arb 3839 ft, abnd 4395 ft.

Stafford County—Stafford: Stanolind's Schneider 2, c s½ ne sw 11-24s-12w, Viola 3832 ft, 1000 gal acid, flow 64 bbls 1 hr 1 in cke, 3840 ft.

KANSAS WELL DEEPENED

Stafford County—Zenith: Stanolind's Harbeson 1, se se nw 11-24s-11w, otd 3743 ft, Viola 3739 ft, 3000 gal acid, 6432 bbls fluid 5½% wtr, 3815 ft.

KANSAS WILDCATS

Barton County—Failure: Ramsey's Evenson 1, ne sw sw 27-17s-11w, Topeka 2655 ft, Lans 3025 ft, sso 3235-40 ft, Base KC 3275 ft, Cong 3293 ft, Arb 3348 ft, wtr 3364-68 ft, abnd 3368 ft.

National and Helmerich & Payne's Haberman 1, sw sw sw 27-18s-13w, Anhy 716 ft, Topeka 2745 ft, Heebner 2992 ft, Lans 3095 ft, Cong 3334 ft, Arb 3360 ft, abnd 3391 ft.

Butler County—Failure: Adair & Morton's Hanson 1, c e½ se ne 4-26s-6e, Miss 2715 ft, abnd 2730 ft.

O. J. Connell et al's Getz 1, sw sw nw 33-28s-6e, Lans 1780 ft, KC 2174-2363 ft, Miss 2814 ft, abnd 2870 ft.

Decatur County: Stanolind's C. H. Hale 1, se se se 32-2s-26w, stratigraphic test complete.

Ellis County—Failure: N. Appleman's Gunther 1, ne ne sw 8-11s-19w, Anhy 1457 ft, Anhy 1417-67 ft, Lans 3350 ft, Cong 3614, Simpson 3662 ft, abnd 3699 ft.

Kingman County — Failure: Wilcox O&G Co.'s Kinert 1, se ne sw 15-30s-7w, Ft. Riley 1435 ft, Florence 1540-65 ft, Neva 1870 ft, Tarkio 2380 ft, Topeka 2710 ft, Miss 4127 ft, Kinderhook 4420 ft, Chattanooga 4505 ft, Simpson 4535 ft, Arb 4674 ft, abnd 4807 ft.

Saline County—Failure: Margay Oil Co.'s Linholm 1, c se nw 9-16s-3w, Lans 2200 ft, Miss 2825 ft, Viola 3323 ft, Simp shale 3468 ft, Simp sand 3509-13 ft, Arb 3536 ft, abnd 3545 ft.

KENTUCKY

Henderson County: Sinclair Prairie's Bur bank 7, 4-P-21, Cyp 2294 ft, 480 bbls, 2304 ft.

KENTUCKY WILDCAT

Hopkins County—Failure: Continental and Carter's F. O. Baker Est 1, 12-J-22, abnd 2433 ft.

NORTH LOUISIANA

Claiborne Parish—Sugar Creek: Roy Lee, Trustee's Richard Sapp 2, nw nw 18-19n-5w, flow 5 bbls per hr, 40/64-in, tp 400, cp 500, perf 5784-5806, 5838-50 ft, td 6290 ft.

Concordia Parish—Lake St. John: California Co. Pan American 5, 15-9-10e, flow 64 bbls 17 hrs, ⅛-in, perf 4561-66, td 4586 ft.

NORTH LOUISIANA WILDCAT

Natchitoches Parish: Blackwell Oil and Gas Co.'s D. Pardee 1, 30-12n-6w, abnd 6510 ft.

SOUTH LOUISIANA

Plaquemines Parish—Delacroix: Texas Co.'s Unit 3 Delacroix, s 25 deg 40 mins w 11,630 ft fr USCGS Station "Long" in state waters, 3-16s-24e, 7-in 10,257 ft, perf 8968-76 ft, flow 119 bbls, ¼-in, td 10,375 ft.

Cameron Parish—Black Bayou: Shell's Watkins 55, 1475 ft w, 1170 n sec 6-12s-12w, 5½-in 7953 ft, perf 7901-11 ft, 7813-36 ft, 7727-95 ft, flow 390 bbls, 10/64-in, td 8034 ft.

Cameron Parish—West Hackberry: Stanolind's State-Black Lake 42-64D, 3362 ft w, 2835 n sec 12-12s-10w, 7-in 9308 ft, perf 9224-78 ft, flow 163 bbls, ¼-in, perf 8966-9000 ft, flow 73 bbls ¼-in, dual completion, td 8588 ft.

Evangeline Parish—Pine Prairie: Humble's Guillory 1, 36-3s-1w, perf 7530-38 ft, flow 206 bbls, 9/64-in, td 8771 ft.

Iberia Parish—Jefferson Island: Texas Co.'s Jefferson Island Salt Mining 9, 3493 ft n, 5514 w of most e'ly cor sec 59-12s-5e, 7-in 8236 ft, perf 8190-8200 ft, abnd 8241 ft.

Jeff Davis Parish—North Roanoke: Union Sulphur's Anding 1-B, 669 ft s, 669 e c 2-9s-4w, 5½-in 8727 ft, perf 8705-13 ft, 152 bbls, ⅛-in, td 8837 ft.

Plaquemines Parish—Potash: Humble's Orleans Levee District 62, 3100 ft sw alg nwl, thence se 100 ft in sec 14-18s-15e, 7-in 9314 ft, perf 7955-70 ft, 213 bbls, ¼-in, td 9479 ft.

LaFourche Parish—Golden Meadow: Texas Co.'s LLE-Golden Meadow 26, 17-820 ft w, 3300 n se c 78 in 75-19s-21e, abnd 4005 ft.

St. Mary Parish—Belle Isle: Sun's Belle Isle 2, Lse 350, 4377 ft n, 232 e swc 19-17s-11e, abnd 11,031 ft.

Terrebonne Parish—Gibson: Union Producing Co.'s Pelican 2-A, 462 ft s 56 deg 53 mins e, 1716 ft n 33 deg 7 mins e swc 20-17s-24e, 5½-in, 8630 ft, perf 8600-25 ft, flow gas, no gauge, td 8630 ft.

SOUTH LOUISIANA WILDCAT

LaFourche Parish—Failure: Atlantic's Allen Land Co. 1, 1980 ft e, 435 n swc 49-19s-22e, abnd 5986 ft.

MICHIGAN

Allegan County — Trowbridge: P. S. Anheuser s Tripp 2, ne ne se 19-1n-13w, Traverse lime, pump 40 bbls, 1347 ft.

Osceola County—Evart: Sun's Wilcox 3, n½ nw sw 27-18n-8w, Dundee lime, swab and flow 176 bbls, 3764 ft.

MICHIGAN WILDCATS

Lake County—Failure: Pinora Dev. Co.'s Wilder 1, n½ ne nw 9-18n-11w, Dundee 3598 ft, abnd 3785 ft.

Ogemaw County — Rose City Discovery: Weber & Associate's State F-1, nw sw nw 33-24n-2e, Richfield dolomite, acid 500 gals, pump 26 bbls, td 5367 ft, pb 4287 ft.

Ottawa County—Failure: Rex Oil & Gas Co.'s Vesbeck 1, ne nw ne 9-8n-14w, Traverse 1913 ft, td 1978 ft.

NEW MEXICO

Eddy County: Acrey & Acrey's State 3, sw se nw 36-17s-27e, pump 8 bbls, acid 2000 gals 459-500 ft.

Etz Oil Co.'s Etz 3-E, c nw se 25-16s-30e, flow 160 bbls 2-in, natural, lime 3020-85 ft.

Nash-Windfohr & Brown's Jackson 5-B, c ne nw 1-17s-30e, flow 25 bbls 2-in, shot 170 qts 2923-3010 ft, td 3176 ft, pb to 3090 ft.

Sanders Bros.' Evans 9, c sw ne 33-16s-30e, flow 188 bbls 2-in, shot 190 qts 2870-2960 ft.

Sanders Bros.' Evans 12, c nw ne 33-16s-30e, flow 40 bbls 2-in, shot 210 qts 2862-2937 ft.

Lea County—Penrose: Parker Drlg. Co.'s Baker-Skelly 1, c ne se 10-22s-37e, flow 20 bbls, ½-in, acid 2000 gals 3630-50 ft, td 3680 ft.

NEW MEXICO WILDCAT

Lea County—Failure: Tide Water Seaboard's Alves-Howell 1, c sw ne 31-18s-35e, elev 3939 ft, top anhydrite 1875 ft, salt 1932-3205 ft, lime 4409 ft, abnd 5315 ft.

NEW YORK

Allegany County: Bradley Prod. Corp., Sprague farm, Alma, 6 bbls, 1352 ft.

Ebenezer Oil Co., Norton farm, Bolivar, 7 bbls, Richburg, 1630 ft.

Ebenezer Oil Co., Allen farm, Scio, 8 bbls, Richburg, 1135 ft.

Hog Brook Oil Co., Pike farm, Alma, 12 bbls, Richburg, 1422 ft.

Russell Oil Co., Duke farm, Alma, 4 bbls, Richburg, 1260 ft.

Bradley Bros., Inc., Sawyer farm, Bolivar, 9 bbls, Richburg, 1430 ft.

L. H. Thornton et al, Shaughnessy farm, Willing, 5 bbls, (Fords Brook) 1269 ft.

Max Andrews, Clair farm, Wirt, 5 bbls, Richburg, 1372 ft.

Gray Oil Co., Smith farm, Genesee, 9 bbls, Richburg, 1434 ft.

Messer Oil Co., Koehler farm, Clarksville, 8 bbls, Richburg, 1435 ft.

F. J. Wilson, Burdick farm, Wirt, 7 bbls, Wirt, 1442 ft.

NEW YORK INTAKE WELLS

Allegany County: Maple Oil Co., Gadsby farm, Bolivar, Waugh-Porter, 1549 ft.

Otsquago Corp., Pike farm, Alma, Richburg, 1437 ft.

H. H. Patterson et al, Black farm, Scio, Scio, 880 ft.

H. H. Patterson et al, Black farm, Scio, Scio, 868 ft.

Bradley Prod. Corp., Smith-Gray farm, Clarksville, Richburg, 1373 ft.

Shamrod Oil Co., Frost farm, Genesee, Richburg, 1365 ft.

OHIO

Ashland County: Ohio Fuel's Butler 1, 242,000 gas, 3125 ft.

Stewart et al's Craig 1, 496,000 gas, 2714 ft.

Coshocton County: Bell Bros.' Bechtel 1, 30,000 gas, 905 ft.

Ohio Fuel's Sannier 1, abnd 3385 ft.

Jefferson County: C. S. Kelly et al's Saltsman 2, abnd 1328 ft.

Lorraine County: Ohio Fuel's Kuntz 2, 120,000 gas, 2710 ft.

Ohio Fuel's Parsons 1, abnd 2485 ft.

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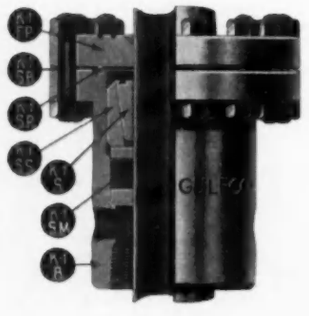

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Medina County: Harry Dempsey's Cleveland Trust 2, 1,670,000 gas, 3277 ft.
Belmont Quadrangle's Cleveland Park Bd. 4, 828,000 gas, 3317 ft.
Monroe County: Robt. Lewis' Wilson 1, 4 bbls, 1600 ft.
Hall & Henning's Dye & Newell 3, 44,192 gas, 2163 ft.
Muskingum County: Industrial Gas Corp.'s Barricklow 1, 719,000 gas, 4426 ft.
Wittmer Co.'s Wilson heirs 1, 431,000 gas, 4170 ft.
Atha Co.'s Terrill 1, 554,400 gas, 4025 ft.
Perry County: Shuff & Bucy's Shaw 1, 4 bbls, 3167 ft.
Putnam County: George Wallace's Baker 3, 5 bbls, 1354 ft.
Washington County: Schneider Oil Co.'s Abicht 2, abnd, 1253 ft.
Ross et al's Marten 11, abnd 723 ft.

OHIO WELL DRILLED DEEPER

Monroe County: F. O. Parks' McAdoo 1, abnd 1267 ft.

OKLAHOMA

Caddo County—Cement: Ohio's Rigney 8, ne sw se 12-5n-9w, sand 3968-83 ft, pb to 4100 ft, pump 56 bbls, 4250 ft.
Marshall County — Cumberland: Pure Oil's Metz 105, se sw nw 28-5s-7e, McLish 5374 ft, sand 5765 ft, flow 15 bbls hr, 5877 ft.
Pure's Little 207-2, se sw nw 34-5s-7e, McLish 5336 ft, sand 5708 ft, 1000 gal acid, pump 92 bbls, 5834 ft.
Oklahoma County—Oklahoma City: Russell's Booth 1, nw sw sw 22-12n-3w, Wx 6470 ft, shot 60 qts 6510-34 ft, pump 275 bbls, 6534 ft.
Pawnee County — Hallett: Mid - Continent's School Land 25, c sw ne 16-20n-7e, Tucker 2913 ft, shot 10 qts, 1000 gal acid, pump 2 bbls, 2942 ft.
Pottawatomie County — Unnamed: J. T. Smith's DeGraff 2, c sw nw 1-7n-3e, 2nd Wx 5086 ft, abnd 5128 ft.
Pottawatomie County—W. Hotulke: Ohio's Bearse B-1, c ne nw 28-9n-4e, Viola 4483 ft, pb 4546 ft, 5000 gal acid, pump 60 bbls oil, 100 wtr, 4663 ft.
Stephens County—Scholem Alecham: Skelly's Gates-Gilmore sw se nw 31-1s-4w, lime 4760-4800 ft, so in sand 4682-4705 ft, abnd 4800 ft.

OKLAHOMA WELLS DEEPENED

Kiowa County — Hobart: H. J. Sherman's Watkins A-1, sw sw nw 20-7n-17w, otd 1201 ft, lime 1055½ ft, pb to 1211 ft, 2000 gal acid, pump 28 bbls oil, 5 wtr, 1276 ft.
Seminole County—Seminole City: Sinclair Prairie's Strothers 1, se se se 27-9n-6e, otd 4010 ft, 2nd Wx 4074 ft, pay 4080-4160 ft, shot 80 qts, pump 51 bbls oil, 10 wtr, 4163 ft.

OKLAHOMA WILDCATS

Noble County—Failure: Ingling & Parker's Levy Est 1, c s½ se se 10-23n-1w, abnd 2400 ft.
Morgan's Devore 1, nw nw sw 17-24n-1e, abnd 1156 ft.
Okfuskee County—Failure: Mid-Continent's Meinholtz 1, sw sw sw 18-12n-7e, Osw 2962 ft, brown lime 3750 ft, Crom 3910 ft, Mayes 4200 ft, Wood 4339 ft, Hunton 4367 ft, abnd 4500 ft.
Seminole County—Failure: Phillips' Burgess 1, c se nw 22-6n-5e, Calvin 2418 ft, Earls 2890 ft, Dutcher 3013 ft, Caney 3117 ft, pb 2340 ft, abnd 3130 ft.
Stephens County — Failure: Louis Sykes' Wallace 1, c sw se 21-1n-8w, Gr Wash 5335-50 ft, lime 5090-5110 ft, abnd 5350 ft.

PENNSYLVANIA

Armstrong County: Charles Rough's Stockdill 1, 100,000 gas, 1050 ft.
Equitable Gas Co.'s Egly 1, 440,000 gas, 1201 ft.
Washington County: Union Gasoline & Oil Corp.'s Craft 839, 5 bbls, 2891 ft.

PENNSYLVANIA WELL DEEPENED

Greene County: Mfgrs. Light & Heat Co.'s Grinnage 1, gas, deepened from 3096 to 3447 ft.

EAST TEXAS

Wood County—Hawkins: Humble's Golightly 1-B, 990 ft from n and 1210 ft from w lines E. N. McKnight sur, flow 167 bbls, ¼-in, Woodbine perf 4696-4714 and 4730-42 ft, td 4771 ft.

NORTH TEXAS

Archer County—Scotland: Roy Lee, Trustee's Edwards 1, 330 ft out NWc lot 24, L. P. Hunt sur, Bend 5195 ft, Mississippi 5698 ft, pump 97 bbls, acid 9000 gals, perf 5195-5210 ft, td 5714 ft.
Clay County: Wilder Dr. Co.'s Taylor 2, 500 ft from ne & 330 ft from nw lines sec 41, Bacon subdiv, pump 10 bbls 1070-75 ft.
Clay County—Watson: Roy Lee, Tr.'s Conrady 1-A, 808 ft from s and 2785 ft from e lines J. H. Fisher sur, Bend 5206 ft, Ellenburger 6014 ft, abnd 6017 ft.
Whitaker Oil Co.'s Newton 2, 467 ft from s and 933 ft from w lines n½ TE&L 2673, flow 173 bbls 10/64-in, acid 3500 gals Bend 5453-75 ft.
Whitaker Oil Co.'s Newton 3, 467 ft from s and 933 ft from e lines n½ TE&L 2673, pump 237 bbls, shot 40 qts, Strawn, 3627-67 ft.
Wichita County—K-M-A Ellenburger: Wd. Showers-W. A. Moncrief's Ferguson 1-E, 1308 ft from s and 625 ft from e lines blk 8, W. H. Spillers sur, Ellenburger 4231 ft, flow 252 bbls, ¼-in, acid 1500 gals 4231-81 ft.
Wichita County: H. L. Graham et al's Reese 1, 330 ft out SWc D. Matthews sur A-668, abnd 1623 ft.

NORTH TEXAS WELL DEEPENED

Archer County—Hull-Silk: Conoco's Wilson-McCrory 2, 330 ft out SWc ATNCL 28, otd 4312 ft, pump 123 bbls, shot 60 qts, 4310-52 ft.

NORTH TEXAS WILDCATS

Clay County—Joy Pool New Pay: Shell's M. Clark 3, 330 ft from e and 909 ft from s lines blk 21, H. Williams sur, Bend 5412 ft, Miss 5945 ft, Ellenburger 6131 ft, pump 61 bbls oil, 7½ bbls water, acid 1000 gals Strawn perf 3950-75 ft, td 6135 ft, pb to 3980 ft.
Jack County—Failure: Barnsdall Oil Co.-Youngblood-Foree's Garrison 1, 1109 ft s and 333 ft w of m/e/ne corner of Thomas Nash sur, Marble Falls 4890 ft, Barnett shale 5348 ft, Mississippi 5663 ft, Ellenburger 5775 ft, abnd 5835 ft.
Montague County—Failure: Youngblood & Foree's Benton 1, 5077 ft from w and 2896 ft from s lines A. A. Lewis sur A-420, Bend (est) 6048 ft, abnd 6198 ft.

TEXAS PANHANDLE

Carson County: Skelly's Schafer 166, 440 ft from n and 2200 ft from e lines I&GN 197, blk 3, pump 438 bbls, shot 415 qts 3020-3100 ft.
Gray County: Phillips' Wray 1, se se nw H&GN 142, blk B-2, elev 3233 ft, abnd 3380 ft.
Hutchinson County: J. M. Huber Corp.'s Weatherly 26-A, 805 ft from w and 700 ft from s lines nw A&B 25, blk Y, pump 430 bbls, granite-wash 3032-87 ft.
Skelly's Crosby-Hatcher 1, nwc TC 3, blk M-24, pump 202 bbls, acid 3000 gals 3260-91 ft, td 3300 ft.
Skelly and Cabot Carbon Co.'s Herring 9-A, 1542 ft from w and 2326 ft from n lines of e-3011-ac of E. Almaguire sur, pump 182 bbls, shot 160 qts 3117-50 ft.
Moore County: Phillips' Harrison 1, 2510 ft out nec H&TC 228, blk 44, 22,500,000 gas, 393 lbs rp, acid 1400 gals 2940-3300 ft, td 3332 ft.
Potter County: U. S. Bureau of Mines' Bivins 6-A, 272 ft from s and 482 ft from e lines BS&F 26, blk 6, 31,000,000 gas, 700 lbs rp, lime 3158-3490 ft.

WEST TEXAS

Andrews County—West Fuhrman: N. G. Penrose, Inc.'s University-Empire 1-C, c nw sw sec 11, blk 10, flow 130 bbls, 5/16-in, shot 460 qts 4374-4589 ft, acid 3000 gals, td 4626 ft.
Andrews County—Fullerton: Fullerton Oil Co.'s Wilson 3-A, c ne ne PSL 16, blk A-32, elev 3355 ft, flow 1549 bbls, 2-in, acid 32,000 gals, Clear Fork 6749-7260 ft.
Andrews County—Means: Humble's Schultz 1, c sw sw PSL 5, blk C-45, 325 bbls, gas lift, acid 11,500 gals 4518-40 ft.
Crockett County—World-Powell: Trebol Oil Co.'s Powell 1, 858 ft from n and 330 ft from e lines nw GC&SF 53, blk BB, pump 193 bbls oil, 20 bbls water, acid 1000 gals 2554-61 ft.
Cockran County — Slaughter: Continental's Dean 1-91, 3363 ft from n and 708 ft from e lines leag 91, Lipscomb CSL, flow 1220 bbls, acid 12,000 gals 5015-75 ft.
Crane County—Sand Hills: Magnolia's Lea 18, 697 ft from s and 660 ft from w lines PSL 4, blk B-32, flow 252 bbls, ½-in, Clear Fork 4400-4610 ft.
Hockley County—Slaughter: L. M. Glasco-R. M. Hutchins' Mallet 3-C, 580 ft out NEc lab 24, leag 48, Edwards CLS, flow 662 bbls, acid 12,000 gals, 4926-76 ft.
L. M. Glasco-R. M. Hutchins' Mallet 9-C, 580 ft out SEc lab 17, leag 48, flow 672 bbls, acid 12,000 gals, 4914-61 ft.
T. F. Morrow et al's Mallet 4, 580 ft out NWc lab 23, leag 48, Edwards CSL, flow 489 bbls, 2-in, acid 12,000 gals, 4922-68 ft.
T. F. Morrow et al's Mallet 8, 580 ft out NWc lab 22, leag 48, flow 586 bbls, acid 12,000 gals, 4936-80 ft.
Texas Co.'s Slaughter Unit 135, 510 ft out SEc lab 80, leag 37, Zavalla CSL, flow 1628 bbls, acid 9500 gals, 4930-5000 ft.
Pecos County—Taylor-Link: Wm. Wolf et al's University-Shell 2-B, ne ne nw sec 32, blk 16, pump 6 bbls oil 13 water, shot 80 qts, 1381-1415 ft.
Pecos County—Walker: Wm. Wolf et al's University-Shell 7-A, ne sw ne sec 26, blk 16, pump 7 bbls, plus 3 bbls water, shot 10 qts 1676-88 ft, td 1723 ft, pb to 1694 ft.

WEST TEXAS WILDCATS

Pecos County—Failures: Continental's Claybrook 1, c ne se T&P 2, blk 50, Tsp 9, elev 2874 ft, anhydrite 1260 ft, Rustler lime 1390 ft, Delaware lime 5240 ft, sand 5268 ft, abnd 5461 ft.
Magnolia's Robertson 1, c nw sw T&StL 16, blk 142, elev 2685 ft, anhydrite 1410 ft, first lime 2910 ft, base Capitan-Delaware contact 4690 ft, top San Andres 4700 ft, abnd in Lower Leonard 7608 ft.
Sutton County—Gas Discovery: S. B. Roberts-M. C. Moore's Allison 2, c nw sw GH&SA 25, blk K, elev 2375 ft, 6,640,000 sweet gas, Strawn 3745-61 ft.

WEST CENTRAL TEXAS

Coleman County: Lone Star Gas Co.'s G. Jones 1, 986 ft from s and 660 ft from w lines 123-ac tr, M. A. Fisk sur 630, 7,000,000 gas, acid 4000 gals 2134-85 ft, td 2206 ft.
Comanche County: J. C. Hamer et al's Smith 5, BBB&C 31, pump 12 bbls, sand 728-42 ft.
Jones County: W. W. Wise-Merry Bros. & Perini's Butler 1, 1901 ft from w and 1427 ft from s lines lot 5, L. B. Ramsey sur 39, elev 1740 ft, abnd 2272 ft.

WEST CENTRAL TEXAS WELL DEEPENED

Eastland County: Lone Star Gas Co.'s Kinnebrew 2, se se ne H&TC 29, blk 4, otd 3197 ft, 120,000 gas, shot 40 qts, 3175-97 ft, original pay, td 3709 ft, pb to 3341 ft.

WEST CENTRAL TEXAS WILDCAT

Eastland County—Failure: E. J. Keough and J. W. Emch's Bible 1, c sw se BBB&C 12, blk 7, elev 1735 ft, Bend 3110 ft, Ellenburger 4050 ft, abnd 4131 ft.
Palo Pinto County—Gas Discovery: Hickok P&D Co-Harry Reynolds-States Oil Corp.'s Allen-Ritchie 1, 1320 ft from m/s/n and 879 ft from m/e/e lines M. E. Connaster sur A-1461, 2,750,000 gas, broken sand 1460-68 ft, td 1471 ft.
Shackelford County—Failure: I. R. McKee et al's Tucker 1, 660 ft from nw and 1822 ft from sw lines TE&L 553, abnd 952 ft.

TEXAS GULF COAST

Chambers County — Oyster Bayou: Sun's Jackson 13, 660 ft fr w, 567 ft fr nl 40-ac unit, 7877-ac tr, TNO 126, 6-in 8370 ft, perf 8280-8310 ft, 176 bbls, ⅛-in, td 8370 ft.
Chambers County—Seabreeze: Sun's Nemes Pool 1, 40-ac tr, TNO 133, 880 ft fr e, 495 ft fr n&sl of unit, temp abnd 10,388 ft.
Jefferson County—Stowell: Glenn H. McCarthy's Hankamer-McLean 1, 40-ac unit, lot 16, Theo F. Koch subdvn, E. Lopez sur, A-37, 7-in 7928 ft, perf 7836-46 ft, flow 486 bbls, 11/64-in, td 8624 ft, extends field 2 miles north.
Glenn H. McCarthy and Brown & Wheeler's Crawford 3, 660 ft fr s, 1650 ft fr el of TNO 158, 5½-in 8920 ft, perf 8878-88 ft, flow 178 bbls, 9/64-in, td 9205 ft.
Jefferson County — Lovell Lake: Shell's Nelson 7, 1175 ft fr n, 467 ft fr wl 984-ac lse, William Rice Hrs sur, A-190, abnd 7721 ft.
Matagorda County — Lucky: Stanolind's Thompson 3, 4594 ft e fr nw cor Thompson 588-ac tr, Elisha Hall sur, 5½-in 8008 ft, perf 7847-60 ft, flow 635 bbls, ¼-in, td 8582 ft.
Wharton County—Boling: Charles A. Elliott's Pridgen 1, 330 ft fr ne'ly line, 900 ft fr se'ly line of 100-ac lse, John Huff sur, abnd 4120 ft.

TEXAS GULF COAST WILDCATS

Matagorda County—Failure: Cities Service's Pierce Est. 1, 2 mi ne Blessing, 85-ac tr, J. W. E. Wallace sur, abnd 9012 ft.
Montgomery County — Failure: Superior's Foley 1, Deering area, 1000-ac tr, Henry Dunnam One-Third Lge, A-163, abnd 12,489 ft.

LOWER TEXAS COAST

Bee County—North Pettus: Union Producing Co.'s Ray 59, 1825 ft fr nel, 4530 ft fr sel of W. J. Porter sur, 16,563-ac lse, Carrizo 6995 ft, 7-in 7040 ft, perf 6994-7020 ft, flow 42,000,000 gas with spray distillate, open flow, td 7047 ft.
Jackson County — Stewart: W. Stewart Boyle's Pagel 2, 540 ft fr n'ly nl, 467 ft fr el 147-ac tr, blk 6, Woolfolk subdvn, George Sutherland survey, sand 4989 ft, 5½-in 5040 ft, perf 4994-98 ft, 78 bbls, 7/64-in, td 5040 ft.
Jackson County—West Mauritz: John B. Coffee's Mauritz Bros. 3-B, 1712 ft fr wl, 1650 ft fr sl e½ M. L. York sur 22, 5½-in 5675 ft, perf 5409-15 ft, 5596-98 ft, flow gas-distillate, no gauge, opens new pay sand, td 5833 ft.
Gulfboard Oil Corp.'s Mauritz 1-B, 467 ft fr s&el's 40-ac tr, B lse, M. L. York sur 22, 5½-in 5662 ft, perf 5475-85 ft, 98 bbls, ⅛-in, td 5662 ft.
Jim Wells County—Von Blucher: 1485 ft fr nl, 1980 ft fr wl Matilda Gardner sur, A-169, 5½-in 7680 ft, sand 6185, perf 6187-92 ft, flow 11,000,000 gas, 50 bbls dist, ⅝-in, td 7720 ft.
Kleberg County — East Stratton: Chicago Copm's Wardner 48, 11,010 ft s alg el 8782-ac lse fr ne cor sec 19, Charles Stratton subdvn, Paso Ancho de Abajo gr, 5½-in 6629 ft, perf 6400-07 ft, 154 bbls, ⅛-in, td 6629 ft.

LOWER TEXAS COAST WILDCATS

Jackson County—Failure: W. Stewart Boyle's Banker 1, 1½ mi e Maubro field, 236-ac tr, blk C, Whistler subdvn, IGN, A-187, abnd 6010 ft.
Jim Wells County—Failure: Sam E. Wilson, Jr.'s Garza 1, LaGloria area, e-40-ac tr of 316-ac tr, share 7, Ramon de la Garza gr, A-110, abnd 7433 ft.
Karnes County—Failure: Henderson Coquat and Dan Auld's Schorre 1, 3589 ft fr nwl, 4064 ft fr swl of 1181-ac tr, Carlos Martinez gr, abnd 8000 ft.

SOUTHWEST TEXAS

Duval County—Conoco Driscoll: Continental's Robert Driscoll 13-B, 3275 ft fr sl, 11,000 ft fr el of 12,000-ac lse, SK&K 446, 6-in 3010

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ft, perf 3002-08 tf, 108 bbls, ¼-in, td 3010 ft.

Duval County—Sejita: Danciger's Canay 1, 660 ft fr s&el's n 50-ac tr, San Pedro de Charco Redondo gr, abnd 60 ft.

Duval County — Cadena: Taylor Refining Co.'s Cadena 2, 488 ft fr el, 1200 ft fr nl Calletano Rios sur 306, 7-in 4600 ft, perf 4563-68 ft, 16 bbls, 3/16-in, td 4600 ft.

Jim Hogg County—Colorado: Humble's East 6, lot 70, subdvn 2, share 3, Las Moretas gr, abnd 3164 ft.

Humble's East 8, lots 70 & 71, subdvn 2, share 3, Las Moretas gr, 1091-ac tr, abnd 3109 ft.

Humble's East 2-D, 660 tf fr w'ly wl, 1857 ft fr sl 659-ac lse, 4½-in 3197 ft, sand 3208 ft, flow 22 bbls, ¼-in, td 3272 ft.

Live Oak County—Oakville: Henderson Coquat's New 2, 330 ft fr ne & nwl's 148-ac lse, James McGloin sur, 5½-in 2746 ft, perf 2742-45 ft, 36 bbls, ⅛-in, td 2746 ft.

McMullen County—South Campana: Magnolia's Kynette 3, 660 ft fr el, 1980 ft fr sl of BS&F 101, 7-in 3016 ft, perf 3012-13 ft, 135 bbls, 3/16-in, td 3016 ft.

SOUTHWEST TEXAS WILDCATS

Duval County—Failure: Argo Oil Corp.'s Braslau 1, 660 ft fr nw & swl's J. Poitevent sur 137, A-459, abnd 2765 ft.

SOUTH CENTRAL TEXAS WILDCATS

Bexar County — Failure: Butcher - Arthur Co.'s Gembler 1, Elmendorf area, 101-ac tr, Juan Montez gr, abnd 1720 ft.

Dimmitt County—Failure: W. J. Walton's McKnight Est. 1, 4 mi sw Carrizo Springs, 80-ac lse, IGN 23, A-918, abnd 2895 ft.

WEST VIRGINIA

Boone County: Owens, Libby-Owens' Bull Creek Coal & Land Co. 647, 103,000 gas, 4303 ft.

Braxton County: Pitts. & W. Va. Gas Co.'s Snodgrass 7907, 204,000 gas, 1861 ft.

Pitts. & W. Va. Gas Co.'s Howell 7900, 683,000 gas, 2303 ft.

Clay County: Thompson Gas Co.'s Sizemore T 60, abnd 2234 ft.

Gilmer County: A. E. Ellis' Hall 2, abnd 1912 ft.

Jackson County: W. Va. Gas Corp.'s Castro 1, 5,166,000 gas, 5275 ft.

Kanawha County: Godfrey L. Cabot's McDonald 1, abnd 2952 ft.

Logan County: Boone County Coal Co.'s Fee 30, abnd 3039 ft.

Raleigh County: Godfrey L. Cabot's Beaver 11, 1,585,000 gas, 2800 ft.

Wetzel County: Carnegie Nat. Gas Co.'s Lowe 1, 189,000 gas, 2982 ft.

United States Wildcat Starts

ARKANSAS

Union County: D. V. Lacefield's Burnside 4, se ne 24-18s-14w, lcn.

Miller County: Barnsdall Oil Co.'s Grace 1, se nw 4-15s-17w, spud.

CALIFORNIA

Kern County: Trico Oil & Gas Co.'s Trico-Amalgamated 1, 17-25-28, Jasmine area.

Kings County: Continental's Drummond 2, 36-18-22, Hanford area.

Los Angeles County: J. Paul Getty's Foothill Orchards 1, 6-2-15, Chatsworth area.

Orange County: Charles W. Camp's 22, 15-6-10, Costa Mesa area.

Ventura County: Pacific Western's Temescal 14, 4-4-18, Rancho Temescal, Piru area.

ILLINOIS

Clinton County: Texas Co.'s Suhl 1, c se ne 20-1n-3w, lcn.

Edgar County: Tom Poppas' J. O. Honnold 1, nw sw nw 1-13n-14w, lcn.

Madison County: McCullough Drlg. Co.'s Blockett 1, se se nw 23-3n-5w, lcn.

Marion County: Shell's Sugg 1, ne nw ne 14-3n-1e, lcn.

Richland County: Black et al's Moseley 1, c sw ne 15-3n-9e, lcn.

St. Clair County: L. L. Benoist's Alberts 1, sw se sw 31-1n-8w, dr.

INDIANA

Gibson County: Superior Oil Co.'s Mary E. Lett 1, se nw ne 30-3s-12w, lcn.

KANSAS

Butler County: Rex & Morris et al's Allen 1, ne nw sw 1-26s-3e, dr 550 ft.

Ellis County: Falcon - Seaboard's Penny-Wann 1, c n½ nw nw 14-15s-20w, lcn.

Greeley County: Helmerich & Payne et al's McCormack 1, c nw ne 23-16s-40w, lcn.

Marion County: Westgate-Greenland Oil's Jantz 1, se se ne 21-19s-3e, mim.

Rice County: Alpine Oil & Royalty, Inc.'s Blackhall 1, ne ne ne 5-21s-8w, dr.

Rooks County: Falcon - Seaboard et al's Chesney 1, cs½ sw nw 8-9s-16w, rig.

Saline County: Phil-Han Oil Co.'s Tinkler 1, se se nw 26-15s-1w, lcn.

KENTUCKY

Henderson County: Carter's Konsler Estate 1, 19-P-23, lcn.

SOUTH LOUISIANA

Beauregard Parish: General Crude's Baldwin 1, Bear area, 990 ft fr w, 330 fr nl sec 27-6s-9w, lcn 9000-ft test, Dixie Drilling Co., contractor.

MICHIGAN

Clare County: Taggart Bros. Co.'s Mills 1, c ne 2-20n-6w, dr.

Montcalm County: Leonard & Rowmor's Throop 1, s½ ne ne 11-12n-9w, lcn.

Oceana County: Muskegon Dev. Co.'s State 1, c nw sw 27-13n-15w, rig.

Ottawa County: R. L. Sander's Bosch 1, c nw se 36-5n-15w, lcn.

Van Buren County: A. C. Murray's Shanahan 1, se ne ne 24-4s-14w, rig.

OKLAHOMA

Caddo County: Watchhorn's Ko-se-sa-nah 1, c sw ne 26-6n-12w, rur, 6000-ft test.

Carter County: J. S. Batson's Goddard 1, se se ne 25-5s-1e, dk.

Grady County: Ohio's Laflin 1, c sw sw 7-5n-8w, lcn 6500-ft test.

Hughes County: Bradley Bros.' McGirt 1-A, sw sw sw 21-6n-8e, rig.

S. W. Collins' Jenkins 1, se nw sw 14-7n-9e, dr 780 ft.

Jackson County: Lloyd Noble's MacDowell 1, c ne nw 24-2n-21w, cellar, 4000-ft test.

Jefferson County: Benson Bros.' Trout 1, ne nw sw 10-7s-6w, lcn.

Lincoln County: Magnolia's Knack 1, c nw ne 7-13n-3e, rig.

Marshall County: Baldwin & Kimball's Taylor 1, se se ne 7-5s-5e, material.

Okfuskee County: Bridges et al's Wilson 1, c ne sw 7-13n-7e, lcn.

Noble County: Atlantic's Boulden 1, se se se 12-21n-2w, lcn.

Seminole County: Bill Vallines' Harris Foundation 1, sw sw sw 30-7n-6e, lcn 1200-ft test.

Stephens County: Carl Carter's Ford 1, se se ne 24-1n-6w, material on ground, shallow test.

NORTH TEXAS

Archer County: W. H. Peckham et al's Wilson-McCrory 1, 1326 ft from n and 330 ft from e lines ATNCL 101, lcn 1650-ft test.

Young County: Anderson - Prichard Oil Corp.'s Mooney 1, 330 ft out NWc s-115½-ac tr, J. Mooney sur, A-1744, lcn 4800-ft test.

EAST TEXAS

Van Zandt County: Royal Pet. Corp.'s Key 1, 660 ft out SEc 287-ac tr and Wm. Willis sur A-955, 2½ mi se Wills Point, mim for Paluxy test.

WEST TEXAS

Castro County: Devore & Slade's W. C. Dinwiddie-Humble 1, c ne ne T&NO 10, blk 9-T, lcn 6000-ft test.

Pecos County: C. W. Brown-L. H. Choate's University 1, c nw nw sec 15, blk 20, lcn 2500-ft test.

Bryce McCandless et al's University 1, c sw se sec 20, blk 26, lcn 6000-ft Ellenburger test.

WEST CENTRAL TEXAS

Hood County: Dr. T. J. Jefferies et al's Hayworth 1, 1200 ft from nw and 990 ft from sw lines Wherry Adams sur 1626, lcn 5000-ft test.

Mills County: Albert P. Groebl et al's Fairman 1, c se ne HT&B 13, lcn 3000-ft test.

LOWER TEXAS COAST

Bee County: Blanco Oil Co. and Al Buchanan's Cook 1, Monteola area, 142-ac lse, William C. Gill sur, A-166, lcn 7500-ft Wilcox test.

SOUTHWEST TEXAS

Jim Hogg County: Sun's Weil Bros. 3, 4500 ft fr n & about 8200 ft fr el lot 4, 4106-ac portion of 25,180-ac lse, Pailtos Blancos gr, 15 mi s of Hebbronville, lcn.

McMullen County: J. W. Gorman's Whitley 1, 990 ft fr n & 1650 ft fr sl 160-ac lse, se¼ sur 128, n Loma Alto field, lcn 3000-ft test.

Starr County: Ike Howeth's Caffarelli 1, 660 ft fr s&wl of share 19-C, porcion 80, 1158-ac lse, 3½ mi ne Los Olmos field, lcn 4250-ft field.

Webb County: M. L. Massingill's Watkins 1, 330 ft fr s&el blk 21, San Casimiro gr, 8 mi nw Moca field, lcn 2000-ft test.

Zapata County: Government Wells Oil Co.'s Garza de Uribe 1, 660 ft fr ne & 2820 ft fr nwl of TCRR 249, lcn.

TEXAS GULF COAST

Colorado County: Magnolia's Anderson 1, Chesterville area, s 40-ac tr, GH&H 15, lcn 11,000-ft Wilcox test.

Men in the Industry's News

RAY C. WHEELER has been elected a vice president of General Petroleum Corporation, quickly following his promotion in December last as manager of the company's manufacturing activities, which encompasses the refining, gas, laboratories, engineering and patent departments.

Wheeler went to California in 1918 as a research chemist, after previous service in the same capacity for United Gas Improvement Company, Philadelphia. His first California work was in behalf of the Army Ordnance Department, in connection with the development of the source of toluol from petroleum. At the close of World War I, he was placed in charge of the General Petroleum Corporation's experimental laboratory. He has since served the company as general superintendent of the gas department, and then as manager of natural gas and gasoline operations, until his recent elevation to vice presidency and manager of manufacturing.

In 1932-33, Wheeler was president of the California Natural Gasoline Association. In the period of 1932-34, he was also vice president of the Natural Gasoline Association of America.

JOHN H. ROMANN, chief metallurgist of Tube Turns, Louisville, was recently appointed chairman of a committee to conduct a special nationwide investigation in industrial plants concerning the low temperature properties of metals. This research is being carried on for the War Department by the War Metallurgy Committee of the National Research Council, National Academy of Sciences, Washington, D. C. Romann has been granted an indefinite leave of absence from Tube Turns in order to direct this work.

DAVE LOGAN, formerly with Oklahoma Corporation Commission and now with PAW, has transferred from the Oklahoma City to the Tulsa office.

DON WINES, geologist, has joined the staff of Midstates Oil Corporation at Tulsa after having been active in the Kansas area for a number of years with other interests.

HAROLD MEDILL, attorney, has resigned from the Kansas Corporation Commission to join the legal staff of the pipe line division at Sinclair Refining Company at Independence, Kansas.

W. M. KIMBRE, General Petroleum Corporation, Los Angeles, recently has been advanced from engineer to superintendent of the gas department.

J. M. BUGBEE, Baroid Sales Company, was elected chairman of the Gulf Coast Section of the American Institute of Mining and Metallurgical Engineers on January 12. He succeeds Stuart E. Buckley, Humble Oil & Refining Company. I. W. Alcorn, The Pure Oil Company, was elected vice chairman. Harold Vance was reelected vice chairman of the Texas A. & M. College branch, and Harry Power was reelected vice chairman of the University of Texas branch. Alexander Duessen was reelected secretary-treasurer. George Corless, Humble Oil & Refining Company, and Ray L. Dudley, THE OIL WEEKLY, were elected directors.

SAMUEL B. PETTINGELL, formerly a member of the Cole Petroleum Committee of Congress, has been made vice president and general counsel of the Transportation Association of America. Pettingell, in connection with his work as a member of Congress, made many friends in the oil industry.

WALTER M. DICK, treasurer of Westinghouse Electric Supply Company, retired December 31, 1942, after 40 years of service. Dick joined Westinghouse October 1, 1901, in the accounting department at Pittsburgh.

P. S. MAGRUDER has been advanced from assistant manager to manager of the gas department of General Petroleum Corporation, Los Angeles. He has been with the company since 1925. He is a past president of California Natural Gasoline Association, and is a member of several committees for PAW District No. 5.

H. G. CAMPBELL has joined the staff of Anderson - Pritchard Oil Corporation, Oklahoma City.

DR. RICHARD J. GONZALEZ, economist of Humble Oil & Refining Company, Houston, is the author of an article in the December issue of "The Controller," official publication of The Controllers Institute of America, in which he emphasizes the new techniques and materials which will be available when the war ends.

"The changes in the next 25 years may far outshadow those of the past quarter century," Dr. Gonzalez declares. "At the beginning of the first World War it would have taken a venturesome spirit indeed to predict that our national income would double in the space of 11 years and reach a level of 75 billion dollars by 1925. The changes which have occurred since 1914 could hardly have been conceived by anyone at that time.

"What an imagination it would have required to predict that we would ever produce nearly 5,000,000 automobiles in one year and 3,500,000 electrical refrigerators—which were then unheard of—and 13,000,000 radios, and that we would have 22,000,000 telephones. Such a prophecy in 1914 would have seemed

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fantastic to the well-informed man of that day. The fact that it did become true depended upon many developments which were not then known, and on the policies of our industrial managers with regard to production, price, employment, wages and countless other factors which influence the growth of our economy.

"So far as the next 25 or 50 years are concerned, we can say with assurance that there do exist tremendous possibilities for lowering the cost of goods and for improving their quality, as well as for creating new goods which will satisfy consumers' wants. We can safely say that the wants of consumers are practically limitless, and that with the right combination of production and distribution we can operate our economy at a maximum rate for years to come without exhausting that demand.

"If we can be as intelligent in establishing proper industrial policies as we have been in discovering new materials and techniques, we will meet the challenge of the post-war period and create a better world than we can even dream of today."

Speaking of the petroleum industry's contribution to the war effort and to the post-war expansion of civilian goods, Dr. Gonzalez points out that the industry has been called upon to produce at least 250,000 barrels per day of aviation gasoline, chiefly 100-octane, although this type of gasoline was regarded as a laboratory curiosity only 10 years ago.

"The industry also has been called upon to manufacture large quantities of other essential war products," the author says, "such as tuolene for explosives, special fuel oil for the Navy, aviation-engine lubricants, and the like. It will account for 75 percent of the synthetic rubber program, which is scheduled to produce more than one million tons a year by the end of 1943. Synthetic rubber production by this industry alone will equal or exceed the United States' use of natural rubber in 1941, which approximated 775,000 tons."

W. N. FINNEGAN, JR., Houston, assistant to the president of Humble Oil & Refining Company, has been named president of the Humble Club for 1943. The club is an employe organization.

RUSSELL B. BROWN, general counsel of Independent Petroleum Association of America, Washington, will address a luncheon meeting of the association at Houston, January 19. Also on the program will be Frank Buttram and Harold B. Fell, president and vice president respectively of the association. H. R. Cullen is vice president for Southeast Texas.

FRED H. WILCOX, district geologist for Magnolia Petroleum Company in the Permian Basin, has been elected president of the West Texas Geological Society. P. D. Moore, producer and geologist, and Dana M. Secor, Atlantic Refining Company, all of Midland, were chosen vice president and secretary-treasurer, respectively.

F. J. FINCH, president of F. & J. Oil Company, Rankin, Texas, was taken by plane to a Dallas hospital for treatment of a fractured hip sustained in an auto mishap January 8 near Rankin.

FRANK L. WIEGAND, 64, assistant treasurer of Oil Well Supply Company, died January 11 at his home in Dallas, Texas. Born in Butler, Pennsylvania, he joined Oil Well Supply Company in 1898 as bookkeeper at Butler. In 1921 he was appointed district manager at Shreveport, and in 1929 was transferred to Tulsa as director of merchandise. Holding positions of responsibility at Tulsa and Dallas, where he moved in 1932, Wiegand became widely acquainted throughout the oil fields of the Midwest.

JOHN STANLEY ROSS, petroleum engineer, Federal Power Commission, was killed January 1, 1943, when his automobile collided with a Washington street car. He was graduated from Leland Stanford University in 1917 with a degree in geology and mining. Except for a year during World War I, spent as an officer in the U. S. Army, Headquarters Detachment, 115th Engineers, A.E.F., he has been identified continuously with the professions of geology and petroleum engineering.

SETH A. HENSLEY, 51, Louisiana - Arkansas division of safety director of Magnolia Petroleum Company, died January 12 at Shreveport.

Squeaks from the Bull Wheel

Evolution

Two men had just made their exits from the theater, and evidently it had been a poor picture, judging from the expression on their faces. One of them said, "You know, it certainly is wonderful how pictures have advanced these last few years."

"How do you mean?"

"Well, first there were the silent pictures, then came the talkies, and now this one smells."

Always Did

"I see by the paper that women are getting men's wages these days."

"Humph—they always have, one way or another."

His Main Concern

"They certainly have a lot of pulchritudinous girls down at the U.S.O."

"Aw heck, what's the difference, so long as they are good looking?"

Short Cut

"Elenita, do you know your alphabet?"

"Yes, papa."

"Then let's see, what letter comes after A?"

"All of them, papa."

Logic

"You're always wishing for what you haven't got."

"What else is there to wish for?"

Knew His Oranges

Teacher—"Tommy, which would you rather have, a half orange or eight sixteenths?"

Tommy—"A half one."

Teacher—"How about it, class—which would you rather have?"

Class (in chorus)—"It's the same thing.

Teacher—"Is that right, Tommy?"

Tommy—"Naw, with all those sixteenths you lose a lot of juice."

Little Girl's Dilemma

"If I grow up will I have a husband like papa?"

"Yes, dear."

"And if I do not get married will I be an old maid like Aunt Susan?"

"Yes."

"Well, I am in a fix."

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Notes for the Equipment Buyer and User

Welding Control

THE LINCOLN ELECTRIC COMPANY

A unique type of arc welding control, which enables the welder to speed up his work and do a more accurate job, has been announced by The Lincoln Electric Company of Cleveland.

This control, called the "Lincolntrol," which is almost as light as a shoe, is strapped onto the welder's foot and enables him to move about with it freely. It is specially intended for aircraft welding, but is applicable for welding of light-gauge sheet metal of all kinds. Because it is so easily used, it will be a boon to women welders, who are taking up this type of work in aircraft plants in increasing numbers.

With the control strapped to his foot, the welding operator merely presses down on the pedal which moves the pin to operate a current control. As he exerts pressure he increases the current.

This permits very accurate control over the welding arc, and achieves in one unit the same results as both the so-called "hot-start" and "crater eliminator." Because he has complete control, he can adjust the arc at any time without changing his position. Yet while welding in and around a fuselage assembly on "pick-up" work, he can move around at will without the hindrance of constantly keeping his foot in one place as is necessary with conventional foot controls.

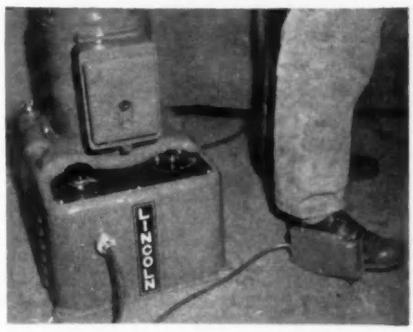
Thus, the control eliminates the necessity of making adjustments on the welding machine, due to such things as minor changes in thickness, and changes in fit-up and enables the operator to weld in any position which he finds convenient or comfortable. The complete control of the arc gives an improvement in the quality of the weld, reducing the danger of a weld burning through or getting poor fusion or penetration.

Joshua Hendy Iron Works Buys Pomona Pump Company

Charles E. Moore, president of Joshua Hendy Iron Works, Sunnyvale, California, has announced purchase of Pomona Pump Company, Pomona, California, and its recently acquired subsidiary, Westco Pump Division, St. Louis, Missouri. Hendy also purchased the plant and equipment of Hydril Company, Torrance, California, to supplement facilities available at Pomona Pump Company.

The purchase gives Joshua Hendy an additional line in the machinery field. This further rounds out the scope created by the recent purchase of Crocker-Wheeler Electric Manufacturing Company, builders of electric machinery at Ampere, New Jersey.

The Hendy interests now embrace four of the major engineering fields: mechanical, electrical, hydraulic and steam, with steam engines, turbines, electric motors and generators, flexible couplings and a wide range of pump types, as well as ship propulsion equipment and large gear-reduction units.



Lincoln Electric Company's arc welding "Lincontrol" is unique in the ease with which it is operated and in its effectiveness. It is strapped on the foot and is almost as light as a shoe.

The Pomona Division will continue to be principally engaged in the manufacture of turbine pumps of the vertical type. The Westco Division specializes in smaller pumps.

Machine Repair

Methods of keeping Lorain machines repaired are described in a new 24-page booklet published by The Thew Shovel Company of Lorain, Ohio, "Thew-Lorain Emergency Fix-It Handbook."

The booklet sets forth not only the best method of meeting emergencies in the field but provides a guide in the use of substitutes for critically hard-to-obtain materials.

The booklet tells Lorain users how to reshape tread pin holes, how to build up tread teeth, what material to use as a substitute for replacement bushings and much similar information.

Westinghouse Abandons Research Fellowships for Duration

The Westinghouse Electric and Manufacturing Company has discontinued for the duration of the war the Research Fellowships awarded annually during the past five years to enable leading young scientists to continue their studies at the company's research laboratories in East Pittsburgh. Like the 25 principal manufacturing plants of the Westinghouse Electric and Manufacturing Company, the research laboratories is concentrating on getting the war job done quickly. Pure research, as such, is being pursued only in instances where it helps the war effort.

Houston Nomad Chapter Plans Annual Gathering

The Houston Chapter of Nomads will hold its annual meeting at the Houston Club on the evening of January 29. A committee composed of Floyd Senter, chairman; Red Davis, Madden Works, Gordon Richmond and Bill Nutto is in charge of arrangements. Nomads of other areas who may be in Houston on January 29 have been invited to attend the meeting.

Wrought Iron

The engineering service department of the A. M. Byers Company, Pittsburgh, Pennsylvania, has issued an unusually co'orful and easy-to-read technical bulletin, "Wrought Iron for Underground Services."

The booklet includes many photographs of underground piping installations under varied conditions in cities throughout all parts of the country.

Two Army-Navy "E" Awards for production excellence were awarded The Dow Chemical Company at Midland, Michigan. Here are shown Major General William N. Porter, chief of Chemical Warfare Service; James W. Driver, company personnel director; C. D. Swain, Naval Inspector of Ordnance, and Dr. Willard H. Dow, president of The Dow Chemical Company. General Porter complimented workers for "in some instances doubling the designated capacities of your plants."

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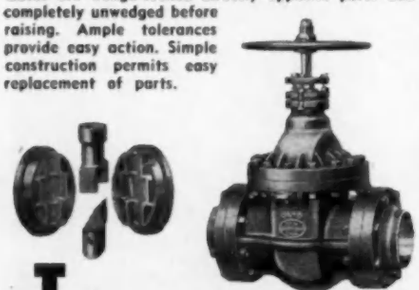

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Advertisers' Index

• Indicates detailed information on products and services included in 1942 edition of COMPOSITE CATALOG OF OIL FIELD AND PIPE-LINE EQUIPMENT.

•Abercrombie Pump Co. 55
•Acme Fishing Tool Co. —
Air Reduction Sales Co. —
•Ajax Iron Works —
The Louis Allis Co. —
Aluminum Company of America —
Aluminum Ore Co. —
American Association of Petroleum Geologists —
•American Cable Division, American Chain & Cable Co. —
•American Iron & Machine Works Co. 32
•American Meter Co. —
•American Sand-Banum Co. 61
•American Steel & Wire Co. —
Atlas Supply Co. —
Axelson Manufacturing Co. 27
•B & W, Inc. —
•Baash-Ross Tool Co. —
•Baker Oil Tools, Inc. —
•Baldwin-Duckworth Division, Chain Belt Co. —
•Baroid Sales Division, National Lead Co. —
Wm. M. Barret, Inc. 60
•Bethlehem Steel Co. —
•Bethlehem Supply Co. —
•Black, Sivalls & Bryson, Inc. —
Black Construction Co. 29
•S. R. Bowen Co. —
•Bowen Co. of Texas, Inc. —
•Braden Steel Corp. —
•The Brewster Co. —
•Broderick & Bascom Rope Co. —
•Brown Oil Tools, Inc. 17
•The Buckeye Traction Ditcher Co. 28
•Bucyrus-Erie Co. —
•The Buda Co. —
•Butler Manufacturing Co. —
•Byron Jackson Co. —
Jo H. Cable —
•Cameron Iron Works, Inc. II Cover
•Cardwell Manufacturing Co. —
•Caterpillar Tractor Co. 3
•The Cavins Corp. 61
•Chain Belt Co. —
Chase Bag Co. 31
•Clark Bros. Co. —
Clark Hotel 52
•Climax Engineering Co. —
•Climax Molybdenum Co. —
•Coffing Hoist Co. —
Columbia Steel Co. —
•Columbian Steel Tank Co. —
•Continental Motors Corp. —
The Continetal Oil Co. —
The Continetal Supply Co. —
•Fred E. Cooper —
•The Cooper-Bessemer Corp. —
Core Laboratories, Inc. —
W. H. Curtin & Co., Inc. 26
O. E. Dempsey Construction Co. 29
DeWitt Hotels 55
•Dowell Incorporated —
•E. I. du Pont de Nemours & Co. —
The Eagle-Picher Lead Co. —
Economy Electric Lantern Co. 60
•Elastic Stop Nut Corp. —
Emsco Derrick & Equipment Co. —
Federal Electric Co. —
•The Edwin H. Fitler Co. —
Fluid Packed Pump Co. —
C. S. Foreman Co. —
Fort Worth Clearing House Association —
Fort Worth Laboratories 60
•Franks Manufacturing Co. —
•Frick-Reid Supply Corp. —
•Gardner-Denver Co. —
•The Garlock Packing Co. 55
•Gaso Pump & Burner Manufacturing Co. —
The Gates Rubber Co. 25
•Gatke Corp. —
•General Electric Co. —
•The Goodyear Tire & Rubber Co. —
•H. P. Gott Manufacturing Co. 62
•Gray Tool Co. —
•Grizzly Manufacturing Co. 26
•The Guiberson Corp. —
•Gulf Coast Machine & Supply Co. 58
Gulf Engineering Co. 31
Gulf Oil Corp. —
Gulf States Utilities Co. —
•Halliburton Oil Well Cementing Co. I Cover
•Harrisburg Steel Corp. —
•Haynes Stellite Co. —
•Hazard Wire Rope Division, American Chain & Cable Co. III Cover
Hercules Powder Co. —
•Hewitt Rubber Corp. —
J. I. Hill Company —
Houston Laboratories 60
•Houston Ready-Cut House Co. —
•Hughes Tool Co. IV Cover
Humble Oil & Refining Co. —
•Hunt Tool Co. 35
Independent Exploration Co. —
•Ingersoll-Rand Co. —
The International Nickel Co. —
Jarecki Manufacturing Co. —
•The Jeffrey Manufacturing Co. —
W. P. Jenny 60
Jensen Bros. Manufacturing Co. —
•Johns-Manville Corp. —
The S. M. Jones Co. —
•Jones & Laughlin Steel Corp. —
•Justrite Manufacturing Co. —
•Kerotest Manufacturing Co. —
•Keuffel & Esser Co. —
•Kinzbach Tool Co. —
•Kobe, Inc. —
Ladish Drop Forge Co. —
Landis Machine Co. —
•Lane-Wells Company 23
•Larkin Packer Co. —
Lebanon Steel Foundry —
•Le Roi Co. —
•A. Leschen & Sons Rope Co. —
•Link-Belt Co. 1
Lone Star Cement Corp. —
•Lucey Boiler & Manufacturing Co. —
•Lucey Export Corp. —
•Lucey Products Corp. —
•The Ludlow Valve Manufacturing Co. 64
Lufkin Foundry & Machine Co. 36
Macklin Co. —
Macwhyte Co. —
Magnet Cove Barium Corp. —
Mark Twain Hotel —
Marmon-Herrington Co. —
•Martin-Decker Corp. —
Hotel McAlpin —
•McCullough Tool Co. —
•McEvoy Co. —
•McKissick Products Corp. —
•Merco Nordstrom Valve Co. —
•Metric Metal Works —
•Mission Manufacturing Co. 48
•Morse Chain Co. —
Murphy Diesel Co. —
National Bank of Tulsa —
National Geophysical Co. —
•National Lead Co. —
The National Supply Co. —
National Tube Co. —
New Bedford Cordage Co. —
Nicholson File Co. —
•The O. C. S. Manufacturing Co. —
•Oil Center Tool Co. —
•Oil City Brass Works —
Oil Well Supply Co. —
•Otis Pressure Control, Inc. —
•The Parkersburg Rig & Reel Co. —
•Patterson-Ballagh Corp. —
•Pelican Well Tool & Supply Co. 53
Petroleum Electric Power Association 51
Petroleum Rectifying Company of California —
•Pittsburgh Equitable Meter Co. —
•Pittsburgh Steel Co. —
•Plymouth Cordage Co. 47
•Quaker Rubber Corp. —
•Raybestos-Manhattan, Inc. —
Reading-Pratt & Cady Division, American Chain & Cable Co. —
•Rector Well Equipment Co. —
•Reed Roller Bit Co. 6
Republic National Bank in Dallas —
Republic Steel Corp. —
•The Ridge Tool Co. —
•John A. Roebling's Sons Co. —
Rodgers Hydraulic, Inc. 41
•Rollway Bearing Co. —
•SKF Industries, Inc. —
•Schlumberger Well Surveying Co. —
The Second National Bank in Houston —
Seismic Explorations, Inc. —
Seismograph Service Corp. —
Sharman and Allen Co. 29
Shell Development Co. —
A. O. Smith Corp. —
Nowery J. Smith Supply Co. —
Southern Engine & Pump Company 54
•Southern Mill & Manufacturing Co. —
•Spang & Co. —
Spang Chalfant, Inc. —
•Sperry-Sun Well Surveying Co. —
•Standco Brake Lining Co. —
Tank Seal Products Co. —
Texaco Development Corp. —
•Texas & Louisiana Tool Co. —
•Texasteel Manufacturing Co. —
The Thermoid Co. —
•Thompson Tool Co. —
•Thornhill-Craver Co. —
Treasury Department —
•Tretolite Co. —
•Union Carbide and Carbon Corp. —
•Union Wire Rope Corp. —
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•Universal Atlas Cement Corp. —
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•J. H. Williams & Co. —
•Wilson Manufacturing Co. —
Wilson Supply Co. —
•Web Wilson Oil Tools Co. —
•Wisconsin Motor Corp. —
•Worthington Pump & Machinery Corp. 2
Wyatt Metal & Boiler Works —
York Oilfield Supply Co. 61
The Youngstown Sheet & Tube Co. 4